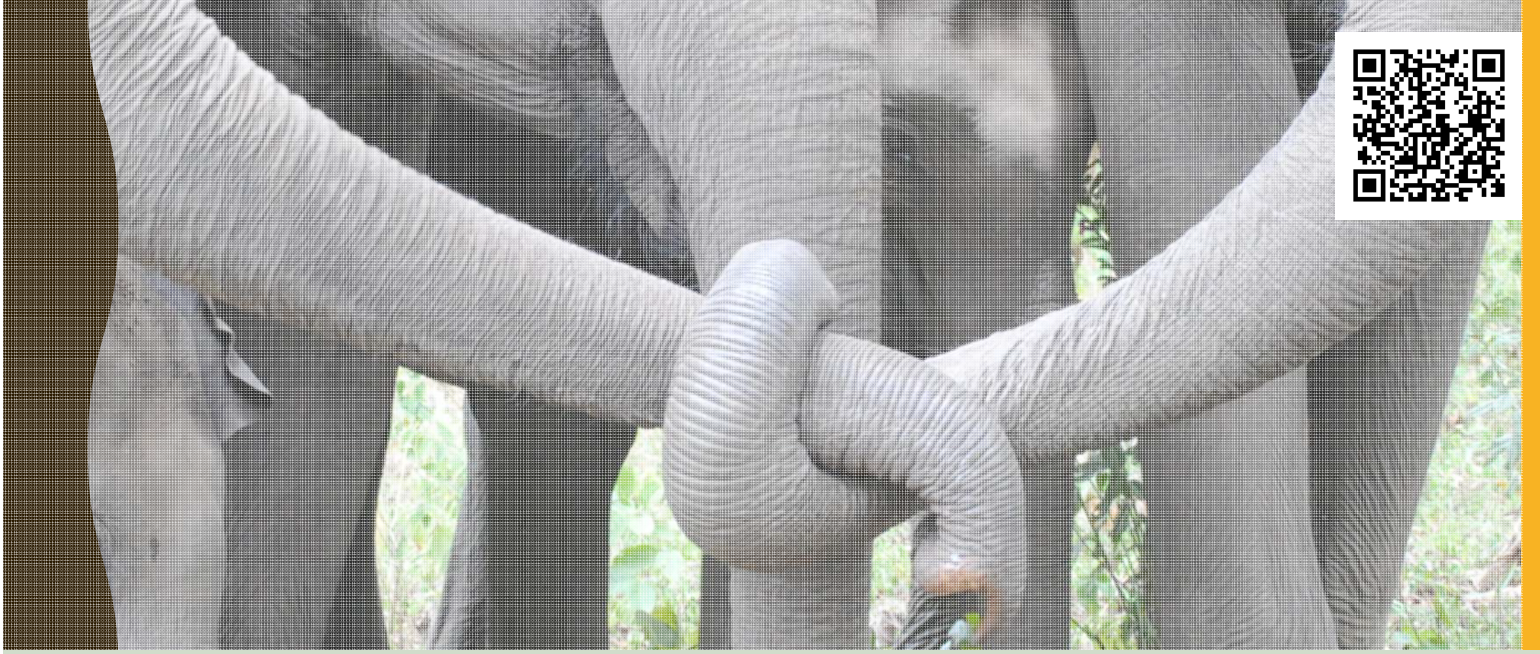


The 9th International Symposium on Primatology and Wildlife Science

Date

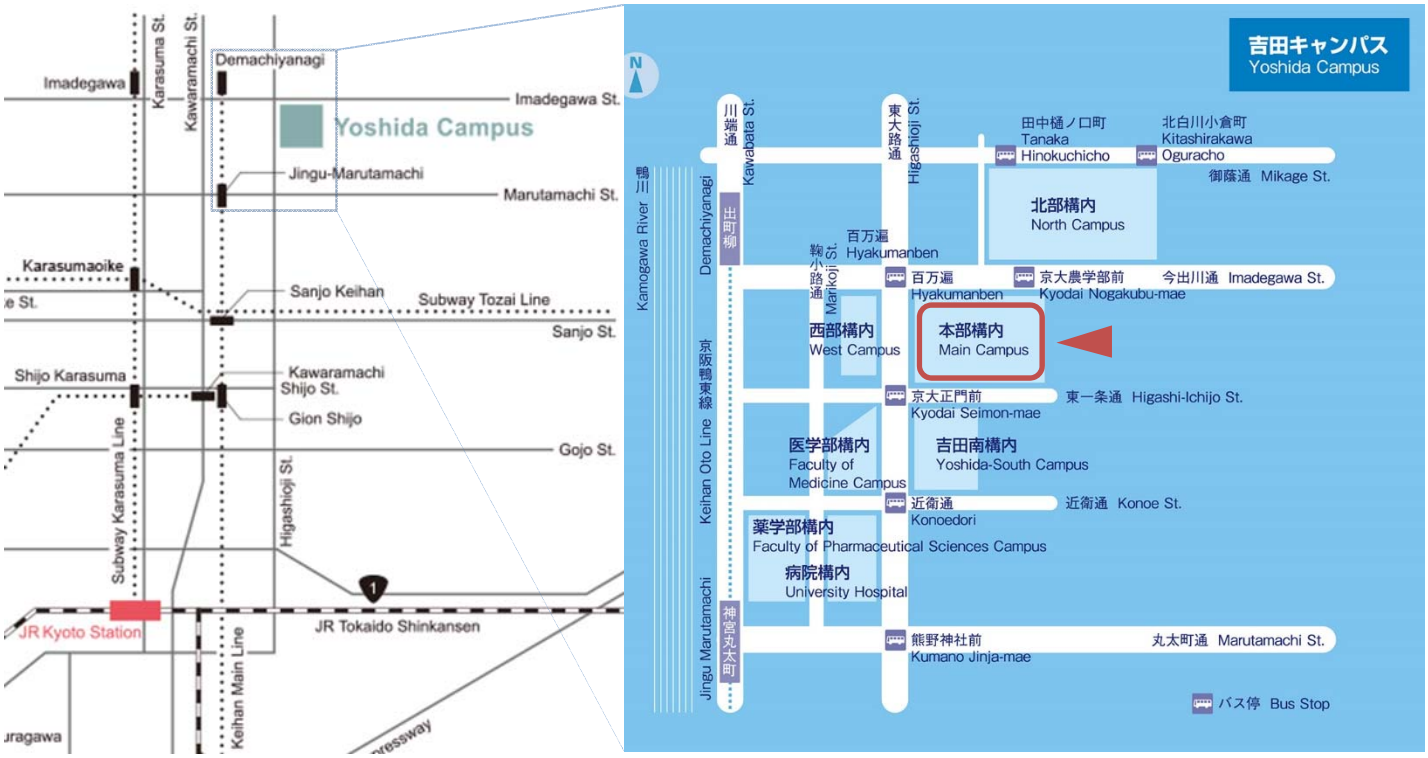
3rd (SAT) - 5th (MON) March, 2018

Venue

Symposium Hall(5F) of International Science Innovation Building, Kyoto University, Kyoto

京都大学吉田キャンパス国際科学イノベーション棟 5F シンポジウムホール

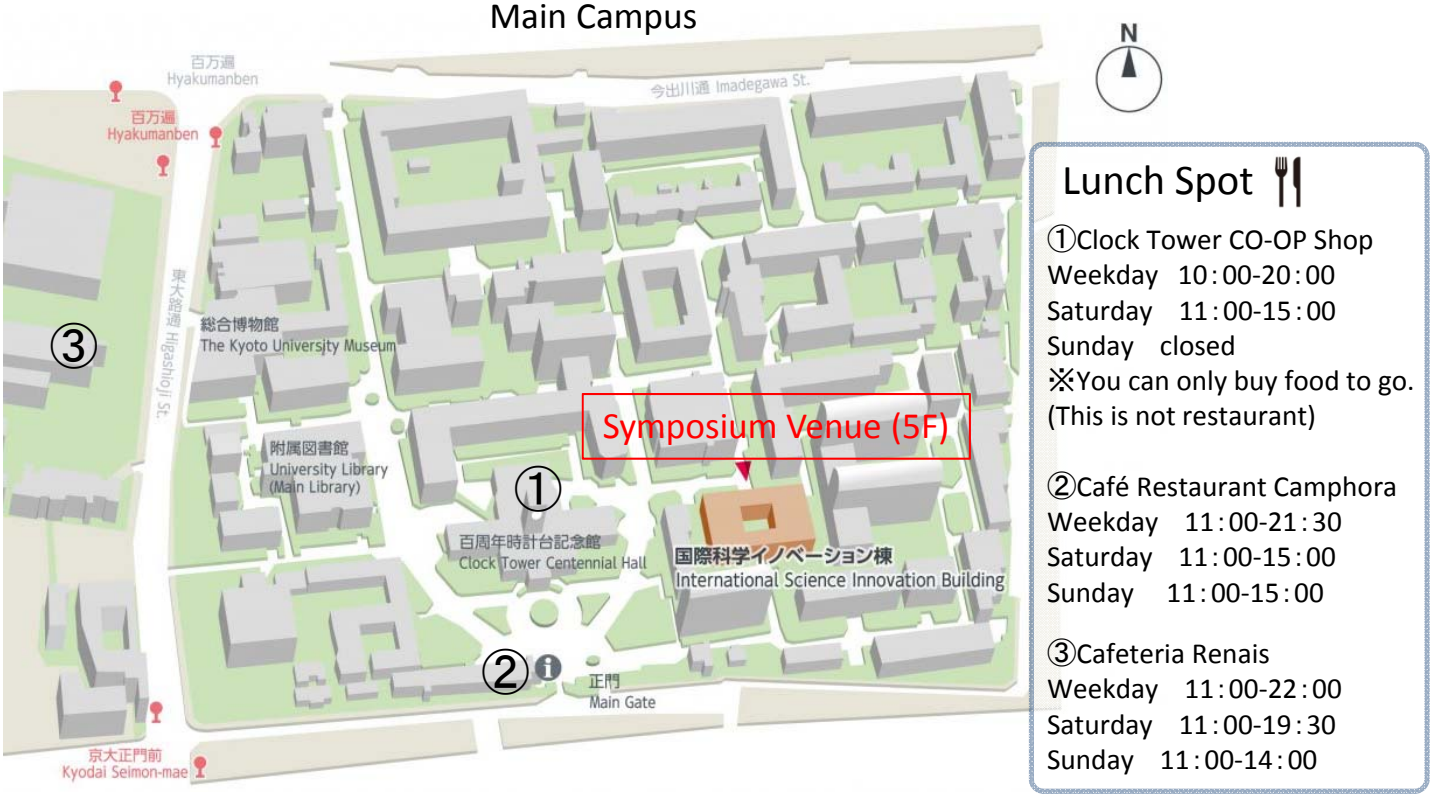
ACCESS



Directions to Campus

Railway station	Transportation from the station	Arrival bus stop	Travel time
Keihan Railway Demachiyanagi Station	Walking		About 20 minutes
JR/Kintetsu Railway Kyoto Station	Kyoto City Bus 206 route name: Gion via Kiyomizu-dera Temple	Kyodai Seimon-mae	About 35 minutes
	Kyoto City Bus 17 route name: Ginkakuji Temple	Hyakumanben	

Main Campus



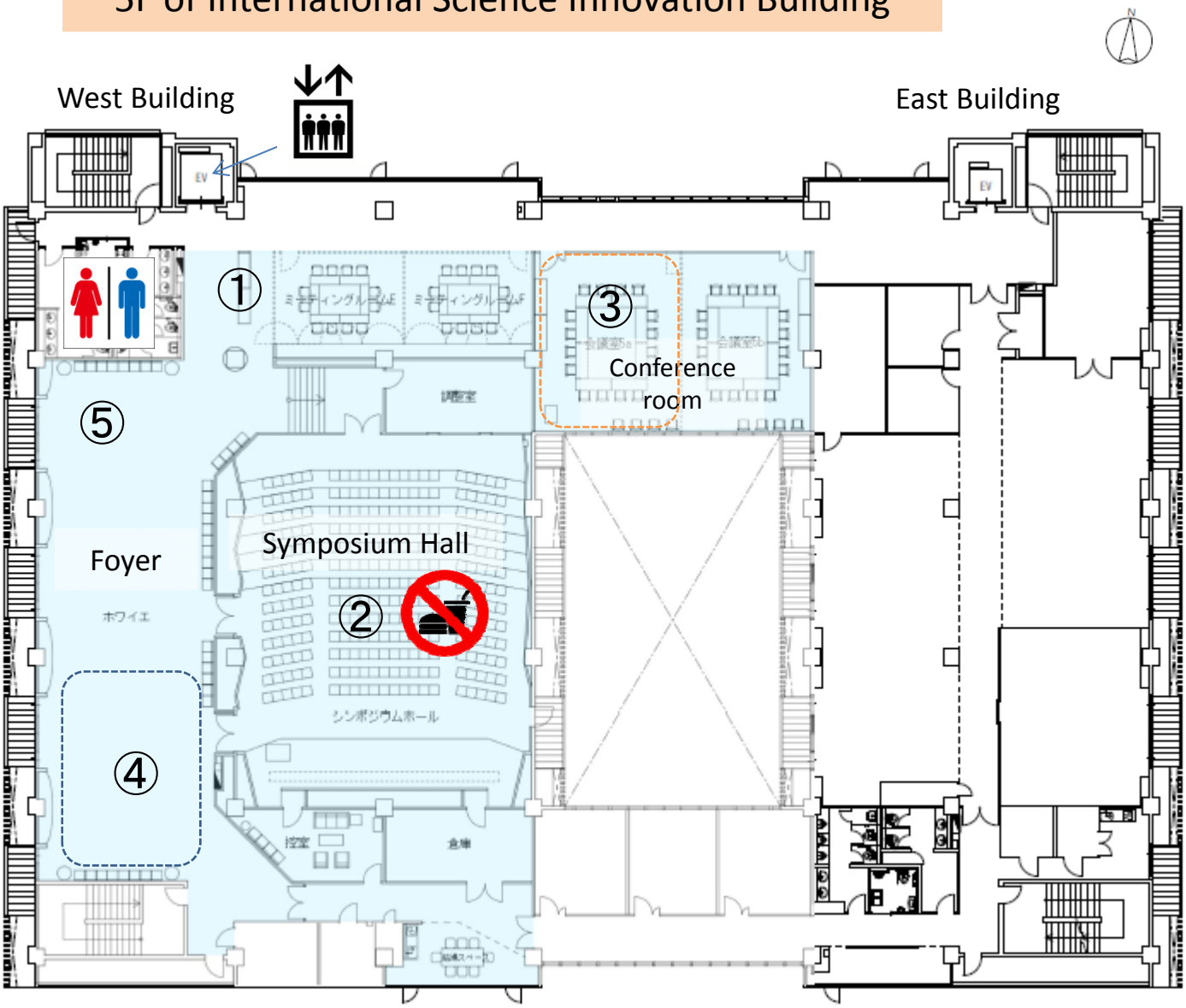
Lunch Spot

①Clock Tower CO-OP Shop
Weekday 10:00-20:00
Saturday 11:00-15:00
Sunday closed
※You can only buy food to go.
(This is not restaurant)

②Café Restaurant Camphora
Weekday 11:00-21:30
Saturday 11:00-15:00
Sunday 11:00-15:00

③Cafeteria Renais
Weekday 11:00-22:00
Saturday 11:00-19:30
Sunday 11:00-14:00

5F of International Science Innovation Building



①Reception ②Oral presentation ③Buddha Seminar
④Poster session ⑤Resting Area (Coffee Break)

Precaution

*<u>**Do not eat or drink in Symposium Hall**</u>.
All food and drinks must be consumed outside in the Foyer area.
*There is a vending machine on the 4th Floor of this Building.
Please be quiet on this floor, as it is shared by others.

The 9th International Symposium on Primatology and Wildlife Science

***As of Feb 23th, 2018

	3rd March (Sat)		4th March (Sun)	5th March (Mon)
9:00-			**Special session: Elephant welfare (Kohshima, Nachi and Duncan)**	**Poster Award**
			(Chair: Shiro Kohshima)	[10min] x 3 (Chair: Seiko Fukushima)
9:30-	9:30-11:30		Raman Sukumar [20min]	**Invited talks by PWS collaborators**
	Conserv' session		Keith Lindsay [20min]	(Chair: Lira Yu and Seiko Fukushima)
10:00-	"Gods in Shackles"		Yumi Yamanashi [20min]	Masahiko Horie [30min]
	@Symposium Hall		Panel discussion and Q & A [60min]	Koustubh Sharma [15min]
10:30-			Panelist: Drs. Lindsay, Sukumar, Kohshima, Matsuzawa and Yamanashi	Kubanychbek Jumabai uulu [15min]
				Tomoko Kanamori[15min]
11:00-			**Coffee Break**	Shinya Yamamoto [15min]
			Progress report by PWS students Ⅲ	Dan Schofield [15min]; Lira Yu [15min]
11:30-		11:30-13:00	[15min] x 5 students (Chair: Andrew MacIntosh)	Closing Remarks (Tetsuro Matsuzawa) [10min]
		ランチセミナー 「環境省」田和優子	Momoko Oka(L1);Mayuko Nomoto(L2);	
12:00-	**[Registration Open]**	「インターンシップ報告」 楊木萌	Anna Kawakita(L2);Miho Tanaka(L2);	
		[Japanese] Lunch Seminar " Ministry of Environment" by Yuko Tawa	Ryoma Otsuka(L2)	
12:30-		"Internship Report" by Moe Yanagi	**Lunch Break**	
		@Conference Room		
13:00-	Opening Remarks by Tetsuro Matsuzawa [10min]			
	Progress report by PWS students Ⅰ			
13:30-	[15min] x 7 (Chair: Yuko Hattori)		**Progress report by PWS students Ⅳ**	
	Yuri Kawaguchi(L2); Josue Pastrana(L4);		[15min] x 6 students (Chair: Ikuma Adachi)	
14:00-	Yutaro Sato(L1); Gao Jie(L3);		Hiroya Takiyama(L1)	
	Akito Toge(L2); Shintaro Ishizuka(L3)		Kei Matsushima(L4);	
14:30-	Nelson Broche(L1)		Yan Xiaochan(L1); Yugo Kawamoto(L2)	
			Miyeon Kim(L3); Liu Jie(L4)	
15:00-	**Coffee Break**		**Coffee Break**	
	Progress report by PWS students Ⅱ		**Special session: Equine research**	
15:30-	[15min] x 7 students (Chair:Takushi Kishida)		Satoshi Hirata [10min] (Chair: Satoshi Hirata)	
	Himani Nautiyal(L4); Nachiketha Sharma(L4);		Helena Freitas [30min]	
16:00-	Moe Yanagi(L1); Miho Saito(L5);		Sota Inoue(L2) [15min]	
	Maegan Fitzgerald(L3); Makiko Take(L3)		Monamie Ringhofer [15min]	
16:30-	Liesbeth Frias(L5)		Renata Mendonca [20min]	
			Yusuke Hori [20min]	
17:00-	**Group photo [15 min]**		**Poster session/PWS exam**	
	Poster session/PWS exam			
17:30-				
18:00-	**Welcoming party**		**Get-together party**	

The 9th International Symposium on Primatology and Wildlife Science
at Symposium Hall(5F) of International Science Innovation Building, Kyoto University

PROGRAM

Day 1 March 3rd (Sat)

Time		(min)	Title	Speaker	Affiliation
9:30-11:30	Conserv' session "Gods in Shackles" @Symposium Hall				
11:30-13:00	Buddha Seminar "Ministry of the Environment" @Conference room				
	Registration				
13:00-13:10		(10)	Opening Remarks	Tetsuro Matsuzawa	PWS Program Coordinator
	Progress report by PWS students Ⅰ				Chair: Yuko Hattori
13:10 | 15:00	O-01	(15)	Visual attention for adult and infant faces in apes	Yuri Kawaguchi (L2)	Primate Research Institute, Kyoto University
	O-02	(15)	Effects of Enriched Social Housing on Female Pygmy Slow Loris (Nycticebus pygmaeus)	Josue Pastrana (L4)	Primate Research Institute, Kyoto University
	O-03	(15)	Chimpanzees' attention to injured individuals: an eye tracking experiment	Yutaro Sato (L1)	Wildlife Research Center, Kyoto University
	O-04	(15)	The body inversion effect in chimpanzees (Pan troglodytes)	Gao Jie (L3)	Primate Research Institute, Kyoto University
	O-05	(15)	Discrimination of forest guenons' dietary insect and niche overlap using DNA metabarcoding of feces	Akito Toge (L2)	Primate Research Institute, Kyoto University
	O-06	(15)	Are larger monkey rest clusters (猿団子) warmer?	Shintaro Ishizuka (L3)	Primate Research Institute, Kyoto University
	O-07	(15)	Progress Report: Salivary alpha-amylase enzyme as a non-invasive biomarker of acute stress in Japanese macaques (Macaca fuscata)	Nelson Broche (L1)	Primate Research Institute, Kyoto University
15:00-15:15		(15)	<Coffee Break>		

	Progress report by PWS students Ⅱ				Chair: Takushi Kishida
15:15 | 17:00	O-08	(15)	Livestock-Central Himalayan Langur interactions in the High-Altitude Meadows of the Garhwal Himalayas, Uttarakhand, India - An Assessment to Evaluate Resource Competition and Parasite Infections	Himani Nautiyal (L4)	Primate Research Institute, Kyoto University
	O-09	(15)	Immediate behavioural responses of Asian elephants to human disturbance in relatively undisturbed habitat	Nachiketha Sharma (L4)	Wildlife Research Center, Kyoto University
	O-10	(15)	Monitoring the lifestyle of African elephants in the hybrid zone between Loxodonta africana and L. cyclotis in the Kibale National Park, Uganda	Moe Yanagi (L1)	Wildlife Research Center, Kyoto University
	O-11	(15)	Allosuckling and male interference with nursing in wild giraffe	Miho Saito (L5)	Wildlife Research Center, Kyoto University
	O-12	(15)	To Drum or Not to Drum? - Selectivity in Chimpanzee Buttress Drumming	Maegan Fitzgerald (L3)	Wildlife Research Center, Kyoto University
	O-13	(15)	Activity report of my D1/L3 year	Makiko Take (L3)	Primate Research Institute, Kyoto University
	O-14	(15)	Parasites in Fragments: Parasite Diversity and Distribution in Red-Listed Primates	Liesbeth Frias (L5)	Primate Research Institute, Kyoto University
17:00-18:00			Group photo & Poster session/ PWS exam		
18:00–			Welcoming party		

Day 2　March 4th (Sun)

Time		(min)	Title	Speaker	Affiliation
Special session: Elephant welfare					Chair: Shiro Koshima
9:00 | 11:00	O-15	(20)	The four pillars of captive elephant welfare in Asia	Raman Sukumar	Institute for Advanced Study, Kyoto University
	O-16	(20)	The lives of elephants in the wild and in captivity	Keith Lindsay	Amboseli Trust for Elephants, Kenya
	O-17	(20)	Current practice and future direction of elephant projects at Kyoto City Zoo	Yumi Yamanashi	Center for Research and Education of Wildlife, Kyoto City Zoo
		(60)	Panel discussion and Q & A Panelist: Drs. Lindsay, Sukumar, Koshima, Matsuzawa and Yamanashi		
11:00-11:15		(15)	<Coffee Break>		
Progress report by PWS students Ⅲ					Chair: Andrew MacIntosh
11:15 | 12:30	O-18	(15)	Effect of Environmental Enrichment on the Behavior of Amur Tigers and the Interaction between Tigers and Zoo Visitors	Momoko Oka (L1)	Wildlife Research Center, Kyoto University
	O-19	(15)	Habitat use of forest elephants (Loxodonta cyclotis) in and around Moukalaba-Doudou National Park, Gabon	Mayuko Nomoto (L2)	Human Evolution Studies, Graduate School of Science, Kyoto University
	O-20	(15)	How do giraffes use shady/sunny places?	Anna Kawakita (L2)	Wildlife Research Center, Kyoto University
	O-21	(15)	Tooth rakes on wild Indo-Pacific bottlenose dolphins (Tursiops aduncus): a possible marker of their social behavior	Miho Tanaka (L2)	Wildlife Research Center, Kyoto University
	O-22	(15)	How Can Community People Actively Participate in Community Conservation ?: The Case of “Human-Gorilla Conflict Resolution Program (HUGO)” in Bwindi Impenetrable National Park, Uganda	Ryoma Otsuka (L2)	Graduate School of Asian and African Area Studies, Kyoto University
12:30–13:30		(60)	<Lunch Break>		
Progress report by PWS students Ⅳ					Chair: Ikuma Adachi
13:30 | 15:00	O-23	(15)	How do chimpanzees (Pan troglodytes) recognize and reply to the voice of other individuals?	Hiroya Takiyama (L1)	Primate Research Institute, Kyoto University
	O-24	(15)	Detecting terrestrial mammals living around saltlick in Malaysia using environmental DNA	Kei Matsushima (L4)	Wildlife Research Center, Kyoto University
	O-25	(15)	Characterization of bitter taste sensitivity of the two species of Sulawesi Macaques	Yan Xiaochan (L1)	Primate Research Institute, Kyoto University
	O-26	(15)	Genetic and functional analysis of PKD1L3/PKD2L1 putative sour taste receptor in Sumatran orangutan	Yugo Kawamoto (L2)	Primate Research Institute, Kyoto University
	O-27	(15)	Vocalization and associated behavior of free-ranging Indo-Pacific Bottlenose dolphins (Tursiops aduncus) in Jeju Island, Republic of Korea: A preliminary description	Miyeon Kim (L3)	Wildlife Research Center, Kyoto University
	O-28	(15)	Home Range Changes of Yunnan Snub-Nosed Monkey (Rhinopithecus bieti) in Laojun Mountain National Nature Reserve	Liu Jie (L4)	Wildlife Research Center, Kyoto University
15:00-15:15		(15)	<Coffee Break>		

	Special session: Equine research				Chair: Satoshi Hirata
15:15 | 17:00	O-29	(10)	Introduction to Serra D'Arga horse project	Satoshi Hirata	Wildlife Research Center, Kyoto University
	O-30	(30)	Framing Cooperation and Biodiversity Knowledge with Africa: the UNESCO Chair in Biodiversity Safeguard for Sustainable Development	Helena Freitas	University of Coimbra & UNESCO Chair Holder in Biodiversity Safeguard for Sustainable Development
	O-31	(15)	Differences in spatial positioning of individuals among horse groups	Sota Inoue (L2)	Wildlife Research Center, Kyoto University
	O-32	(15)	Social behavior of the stallion and the maintenance of the harem group: a study on feral horses in Serra D' Arga, northern Portugal	Monamie Ringhofer	Institute of Advanced Study, Kyoto University
	O-33	(20)	Investigating the causes of adult and foal disappearance and mortality in feral horses in North of Portugal: A preliminary approach on prey-predator interactions	Renata Mendonca	Primate Research Institute, Kyoto University
	O-34	(20)	Genetic polymorphisms and personality traits in horses:	Yusuke Hori	Graduate School of Letters, Kyoto University
17:00-18:00	Poster session/ PWS exam				
18:00–			Get-together Party		

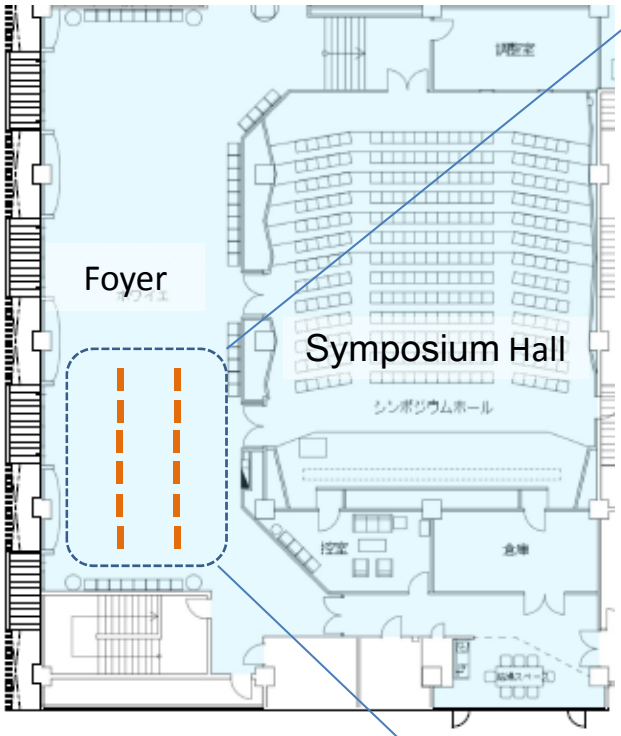
Day 3　March 5th (Mon)

Time		(min)	Title	Speaker	Affiliation
Poster award					Chair: Seiko Fukushima
9:00 | 9:30		(10)	Presentation 1	Award Winner 1	
		(10)	Presentation 2	Award Winner 2	
		(10)	Presentation 3	Award Winner 3	
Invited talks by PWS collaborators					Chair: Lira Yu, Seiko Fukushima
09:30 | 11:30	O-35	(30)	“Living in Harmony with Nature”~ For the Survival of this Planet ~	Masahiko Horie	Foreign Ministry of Japan
	O-36	(15)	Snow leopard conservation: from local action to global policy and governance	Koustubh Sharma	Snow Leopard Trust
	O-37	(15)	Snow leopard research and conservation programs in the Kyrgyz Republic	Kubanychbek Jumabai uulu	Snow Leopard Foundation in Kyrgyzstan
	O-38	(15)	Middle to large mammalian fauna in Danum Valley with camera trap	Tomoko Kanamori	Primate Research Institute, Kyoto University
	O-39	(15)	Bonobos in forest-savanna mosaic environment: development and perspectives of our newly launched wild bonobo research site	Shinya Yamamoto	Institute of Advanced Study, Kyoto University
	O-40	(15)	The Bossou archive project: progress and future directions	Dan Schofield	Institute of Cognitive and Evolutionary Anthropology, Oxford University
	O-41	(15)	Comparative and developmental studies on rhythmic coordination	Lira Yu	Wildlife Research Center, Kyoto University
11:30-11:40		(10)	Closing remarks	Tetsuro Matsuzawa	PWS Program Coordinator

Poster Session

	Title	Presenter
P-01	Development of combinatory manipulation and tool-use repertoire in great apes and humans	Misato Hayashi
P-02	What is the unity of rider and horse? : Subjective and objective evaluation during trotting.	Sakiho Ochi
P-03	Evidence for self-domestication in wild coyotes?	James Brooks
P-04	Pet food sustains feral cats, which may indirectly affect endangered species on Tokunoshima Island	Tamao Maeda
P-05	Motivation and satisfaction of foreign tourists visiting Arashiyama Monkey Park Iwatayama	Tamaki Shimegi
P-06	Facial discrimination and attentional bias towards faces in chimpanzees	Duncan Wilson
P-07	Female choice criterion for sexual and/or social partner in bonobos	Takumasa Yokoyama
P-08	Triadic awareness predicts partner choice in male-infant-male interactions in Barbary macaques	Barbora Kuběnová
P-09	Do non-human primates possess a concept of death? Measuring biological expectations among captive chimpanzees and macaques with regards to living versus dead states	André Gonçalves
P-10	To carry or not to carry: changes in stress hormones in a case of dead infant carrying in Japanese macaques	Sayuri Takeshita
P-11	Behavioral and cognitive aging in captive and wild chimpanzees	Kristin Havercamp
P-12	Behavioral coordination of mother-infant pairs and mother-infant-sibling triads at the onset of travel in wild chimpanzees	Hiroko Sakuragi
P-13	Allogrooming Body Site Preferences: a comparison between Wild and Captive Chimpanzees and Bonobos.	Morgane Allanic
P-14	Stable nocturnal activity and seasonal changing diurnal activity of brown lemur (Eulemur fulvus): implication for the advantage of cathemerality from nocturnal to diurnal life	Tojotanjona Patrick Razanaparany
P-15	Experiments beyond the laboratory	Xu Shenwen
P-16	LIPS COLORATION AS A FERTILITY TRAIT IN WOMEN	Lucie Rigaill
P-17	Both of morphological and behavioral views are important to know the animal	Misa Hayashi
P-18	Swimming order in the group of wild dolphins approaching underwater swimmer: difference by sex and age class	Kasumi Sakakibara
P-19	Study of the ecology of leopard	Sosuke Minami
P-20	The diet of the leopard (Panthera pardus) in Mahale Mountains National Park, Tanzania.	Nobuko Nakazawa
P-21	Behavioral characteristics of scent marking and its social role in cheetahs	Misa Suzuki
P-22	Expression analysis of cells with induced transcription factors using the next-generation sequencer	Masahiro Kaneko
P-23	Development of simple non-invasive methods for estimating population density of the Japanese squirrel and my future research plan: genetic diversity analysis of the Ryukyu flying fox	Yuto Taki

Poster session Venue



P-18	P-12	P-06	
P-19	P-13	P-07	P-01
P-20	P-14	P-08	P-02
P-21	P-15	P-09	P-03
P-22	P-16	P-10	P-04
P-23	P-17	P-11	P-05

O-01

Visual attention for adult and infant faces in apes

Yuri Kawaguchi[1*], Fumihiro Kano[2] and Masaki Tomonaga[1,2]
[1] *Primate Research Institute, Kyoto University, Aichi*
[2] *Wildlife Research Center, Kyoto University, Kyoto*
[*] kawaguchi.yuri.57r@st.kyoto-u.ac.jp

In human and nonhuman primates, infants are the special members in a society because they require extensive caretaking from adults, and, in certain societies and species, they are at a risk of infanticide. Intriguingly, in a species like chimpanzees, the appearance of an infant is clearly distinguished from that of an adult (e.g. white face) but in other species like bonobos, the appearance is similar between an infant and an adult. It remains unclear how adults of these species perceive infants. In humans, there is a study showing that females looked at infant faces longer than adult faces. No study examined such attentional bias in non-human animals. This study examined viewing patterns for adult and infant individuals in chimpanzees and bonobos using a non-invasive eye-tracker. Fifteen chimpanzees and 6 bonobos living at Primate Research Institute (PRI) and Kumamoto Sanctuary (KS) participated in this study. We presented to them the pictures of mother-infant dyad of these species (both chimpanzees and bonobos) and an outgroup species (Japanese macaque). Areas of Interest (AOIs) were defined for the faces of adults and infants for each stimulus, and the total looking time for the faces were analyzed. Chimpanzee participants showed significant looking bias to the chimpanzee infants and marginally significant looking bias to the macaque infant. Conversely, bonobo participants showed significant looking bias to the adult chimpanzees and adult macaques. Neither chimpanzee nor bonobo participants showed looking bias to the bonobo infants/adults. Such different attentional bias to infants may reflect both species specific interest to infants and appearance of infant in these participants.

O-02

Effects of Enriched Social Housing on Female Pygmy Slow Loris (*Nycticebus pygmaeus*)

Josué Alejandro Pastrana[1*], Michael Huffman[1], 根本慧[2], 土性亮賀[2], 山梨裕美[3,4]
[1]*Primate Research Institute, Kyoto University*
[2]*Japan Monkey Centre*
[3]*Kyoto City Zoo*
[4]*Wildlife Research Center, Kyoto University*
[*]josue.pastrana.64s@st.kyoto-u.ac.jp

Pygmy slow lorises (*Nycticebus pymaeus*) are targets of various types of anthropogenic activities such as hunting, pet trade, habitat loss, and are listed as a Vulnerable by the IUCN Red List of Threatened Species. Their small size and infrequent vocalizations make them an easier target for international pet smuggling compared to other primate species. The objective of our work was to study the behavioral and postural changes, as well as their social behavior by measuring the proximity of the rescued female pygmy lorises from individual cages to more enriched, larger, social housing. Postural movement is very important for this nocturnal arboreal species, and more enriched housing should provide a wider range of postures. Although they are generally reported as being a solitary species in the wild and have low success rates on same-sex female pairs (Fitch-Snyder 2004), they can be socially housed successfully and having the choice of social interactions may ameliorate stress related to captive housing.

We observed 6 female pygmy slow lorises housed at the Japan Monkey Centre between June 2017 through February 2018. The 6 females were first transferred individually to an enriched enclosure on 8/25/2017 (first group) and 12/19/2017 (second group), respectively. After the move, we formed two social groups with the females; one with two females and another with four females. Weekly 10-minute focal recording sessions for each female were made with a night vision camera between 13:00-16:00 from August 2017-February 2018 before and after the group formation. For positional and behavioral observations, we used continuous focal sampling (Altmann 1974) and, for proximity we divided the enclosure into quadrants: far (opposite side of enclosure), close (within 2 meters), social (arms-reach), and nesting (sharing nest).

We found that all individuals had an increase in social behaviors, a more varied repertoire of postures, and their activity budgets differed from their previous housing conditions. We believe that our findings might contribute to captive management and improvements on animal welfare concerns by documenting the success of female isosexual groups within the species. In the future, we will combine the data of physiological indicators of stress to understand the detailed effects.

O-03

Chimpanzees' attention to injured individuals: an eye tracking experiment

Yutaro Sato[1*], Fumihiro Kano[1] and Satoshi Hirata[1]
[1] *Wildlife Research Center, Kyoto University*
[*] sato.yutaro.76w@st.kyoto-u.ac.jp

Nonhuman primates sometimes inspect, groom, or lick a wound of their groupmates. Although there are some field observations reporting such behaviors, the underlying motivation remains unclear. Like humans, do others' wounds attract attention and evoke negative emotional reactions in nonhuman primates? In our first experiment, we measured spontaneous gazing of six captive chimpanzees (*Pan troglodytes*) by an eye tracker while they were viewing eight photos of a wounded chimpanzee paired with that of a chimpanzee without wounds. Chimpanzees viewed the wounded conspecifics significantly longer than non-wounded conspecifics. When the part of wounds was scrambled in the images so that the wounds were masked while maintaining its low-level visual property (e.g. redness) at the pixel level, no significant difference was found in their viewing durations. Moreover, when we analyzed their viewing times for the parts of wounds in the images, chimpanzees viewed the wounds significantly longer than the corresponding parts of the non-wounded conspecifics, whereas no such difference was found in the scrambled image pairs. These results suggest that chimpanzees attend spontaneously to others' injuries. In the next experiment, we recorded their nasal temperature, one of the psychophysiological indexes, while they were viewing visual stimuli featuring injured conspecifics. We would like to show the preliminary results. To the best of our knowledge, this is the first experimental study that examined chimpanzees' reaction to injured animals.

O-04

The Body Inversion Effect in Chimpanzees (*Pan troglodytes*)

Jie Gao[1*], Masaki Tomonaga[1]
[1] *Primate Research Institute, Kyoto University, Inuyama, Aichi*

[*] gao.jie.87c@kyoto-u.jp

Bodies are very important for animals. Animals use bodies to explore and to interact with the world. Humans' body recognition is deteriorated by inversion. This inversion effect suggests a configural way to process bodies. However, little is known about body perception in non-human primates. We tested seven chimpanzees using upright and inverted stimuli in matching-to-sample tasks to examine the body inversion effect. Experiment 1 used chimpanzee bodies and houses. Experiment 2 used intact bodies, bodies with blurred faces, and faces with blurred bodies. Experiment 3 used intact bodies, bodies without faces, only faces, and body silhouettes. Experiment 4 used intact bodies and scrambled bodies. Chimpanzees showed the inversion effect to all intact body conditions, and this suggests that they use the configural way to process bodies. They also showed the inversion effect to faces with blurred bodies in Exp. 2 and to silhouettes in Exp. 3 but no inversion effect in other conditions, suggesting that the faces and body contours are salient for the inversion effect and for the configural processing. No inversion effect was found in scrambled bodies, suggesting that they have the knowledge about typical body structures.

O-05

Discrimination of forest guenons' dietary insect and niche overlap using DNA metabarcoding of feces

Akito Toge[1*], Takashi Hayakawa[1,2], Munehiro Okamoto[1] , Chie Hashimoto[1], and Takakazu Yumoto[1]

[1] *Primate Research Institute, Kyoto University, Inuyama, Aichi*

[2] *Japan Monkey Centre, Inuyama, Aichi*

[*] toge.akito.28x@st.kyoto-u.ac.jp

There are records of primates eating most of the 30 orders of the Class Insecta. However, little is known about what particular species they eat because of difficulty to identify the prey insects by observation. We detected some of dietary insects of blue monkeys (*Cercopithecus mitis*), red-tailed monkeys (*C. ascanius*) and L'Hoest's monkeys (*C. lhoesti*) by DNA metabarcoding of fecal samples, and evaluated dietary overlaps among them at OTU (Operational Taxonomical Unit) level. We collected their fresh feces in the Kalinzu Forest from July to September (the end of dry season) in 2016 and 2017, and finally analyzed 73, 52 and 63 samples, respectively. DNA sequences were clustered into OTUs at 97% similarity. As a result, about 50% of Arthropoda OTUs belonged to the Order Lepidoptera. Averaging OTU occurrence (presence/absence) across all samples showed that many Lepidopteran OTUs were often consumed by three monkey species. Calculating Morisita's measure of niche overlap, we found considerable overlaps among them. The highest was seen between blue and red-tailed (0.699), while the lowest was seen between blue and L'Hoest's (0.401). Comparing diet composition among species using PERMANOVA of Jaccard dissimilarity, we found that three species were significantly different in the prey OTU composition ($_{pseudo}F$ = 3.42, ω^2 = 0.025, p < 0.001), but the effect size (ω^2) was relatively small. The abundance of Lepidopteran insects may be so high in the end of dry season, when these monkeys spend long time on feeding insects, that they can highly overlap dietary insects. On the other hand, the difference in prey composition may reflect their physiological, ecological and behavioral characteristics. Collecting fecal samples in the other seasons and more detail identification by constructing local insect DNA libraries will be needed in the near future.

O-06

Are larger monkey rest clusters (猿団子) warmer?

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Although Japanese macaques (*Macaca fuscata*) form rest clusters, which are huddled by some animals each other, huge clusters (over 50 animals) are observed only in the population of Shodoshima Island. A previous study suggested that those huge clusters are formed only in winter, functioning as protection against the cold. However, Shodoshima Island is not the coldest area in Japan, suggesting that formation of huge clusters cannot be explained only by protection against cold. I investigated the relationship between rest cluster size and its temperature. I also analyzed centrality in rest clusters, and joining cluster size of individuals to estimate the difference in warmth between dominance ranks. By picking one rest cluster with 5-min intervals, I recorded the number of participants, and the average temperature by using a thermo camera. I also took photos of rest clusters from above, and analyzed centrality of individuals. Temperature of rest clusters did not increase as rest clusters became larger. This suggests that huge rest clusters might not function as protection against the cold. An alternative explanation for the formation of huge rest clusters in Shodoshima Island may be that the tolerance towards other individuals may allow monkeys to huddle each other outside of kinship. The centrality in rest clusters and joining rest cluster size were greater in the highest ranking male than in other males, whereas this tendency was not observed among females. This suggests that rest clusters may have a social function in males only.

O-07

Progress Report: Salivary alpha-amylase enzyme as a non-invasive biomarker of acute stress in Japanese macaques (*Macaca fuscata*)

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Human studies have revealed salivary alpha-amylase (sAA) enzyme levels are directly associated with the release of the hormone norepinephrine, allowing sAA to act as a biomarker for sympathetic nervous system (SNS) activity. The SNS is associated with the fight-or-flight response and is a separate but parallel stress response system to the hypothalamic-pituitary-adrenal (HPA) axis. Recent non-human primate studies have made progress in using sAA as an additional physiological stress marker. However, there are currently no published reports of sAA validation as an acute stress response marker in Japanese macaques. Furthermore, saliva collection could prove itself to be stressful for the monkey. Consequently, developing a non-invasive method for cooperative saliva collection between the researcher and monkey is not only necessary for accurate data collection but also ethically sound. Therefore, this study has a two-fold aim: [1] non-invasively collect saliva with the monkey's cooperation and [2] validate sAA as a biomarker of acute stress in *M. fuscata*. Validation of sAA enzyme as an acute biomarker in Japanese macaques could provide a useful tool for future research questions as well as practical uses in animal welfare. I discuss developing a methodology for saliva collection, current findings, and other recent research activities.

O-08

Livestock - Central Himalayan Langur interactions in the High-Altitude Meadows of the Garhwal Himalayas , Uttarakhand, India - An Assessment to Evaluate Resource Competition and Parasite Infections

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Keyword: Alpine meadows, transmission, grazing, vegetation loss, exclusion experiments

The alpine meadows in Garhwal Himalayas supports various wildlife ranging from large herbivores like ungulates to carnivores like leopards. But the grazing by livestock's in these meadows have led to drastic changes in its vegetation composition and also resulted in depletion of plant species from past ten to twenty years. The Central Himalayan Langurs *(Semnopithecus schistaceus)* living in these alpine meadows have to address competition for resources by Livestock's; probable source for parasite infections. With this motivation, the impact of vegetation loss by grazing, quantification of dietary overlap, evaluation of resource competition and risks of zoonotic parasite transmission are investigated under current study. An evaluation for resource competition between livestock and langurs was carried out by behavioral observation of langurs and exclusion experiments in the alpine meadows. It is observed that herbs constitute an important part of the langur diet. But 67% of the herbs consumed by the langurs were damaged by livestock impacting negatively towards plant growth and their availability in these alpine meadows. These results show the potential direct competition for resources between langur and livestock for feeding. It will be critical to quantify these interactions pinpointing directions towards future research and for preparation of conservation plan considering all stakeholders. To identify possible sources for parasite infection, a comparative analysis between langurs and livestock is carried out. Three major groups (nematode, protozoa, and trematodes) of gastrointestinal parasites is found in livestock and langur population. Though result shows differences in intensity and prevalence of infections between livestock's and langurs, but there is significant overlap (75%) in likely species infections. The most likely source of these infections is the meadows, itself. The high number of infected livestock foraging and defecating in the meadows could be responsible for the spillover of infections into langurs sharing the same region. This baseline information suggests the need for more detailed studies to verify zoonosis and to confirm parasite transmission from livestock to langurs.

O-09

Immediate behavioural responses of Asian elephants to human disturbance in relatively undisturbed habitat

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The escalating human-elephant conflicts are one of the major conservation concerns among elephant-ranging countries. In such scenarios, along with assessing the influence of man-made perturbations, addressing the behavioural plasticity of elephants will be essential for their welfare and management. Many studies have documented the behavioural responses of Asian elephants when they are in human-modified landscapes. However, there is less understanding of how Asian elephants perceive human-induced threats when they are in the undisturbed habitats. Hence, to address this aspect, we conducted a study on free-ranging Asian elephants in Mudumalai and Bandipur Tiger Reserves where there is relatively less human-induced threat or disturbances than other human-dominated landscapes. We used two different modes of disturbances i.e., vehicular sounds and humans on foot, to assess how elephants use them to detect human presence and how they respond towards them. We measured the total time they remained vigilant, the total distance they moved after the disturbance and the vocal responses at a group level. Our preliminary findings, based on 100 events, showed that Asian elephants spent more time in vigilance in response to humans on foot compared to vehicular disturbance and moved further away when they find humans on foot compared to vehicular sound. The immediate vocal responses are mainly trumpets and chirps. However, 'rumbles' were used when elephants detected human on foot than vehicular sounds. Initial distance of disturbance and group size influenced the immediate vocal responses of Asian elephants. These results indicate that among the investigated parameters, free-ranging Asian elephants are highly responsive to humans on foot and usually avoid humans in their natural habitat. However, these results may entirely depend on the population and the degree of exposure to humans in their natural habitats. The information from the study can be useful in developing site-specific conservation strategies.

O-10

Monitoring the lifestyle of African elephants in the hybrid zone between Loxodonta africana and L. cyclotis in the Kibale National Park, Uganda

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The density of elephants in the Kibale National Park (KNP) has become increased recently because of their migrating from the Democratic Republic of Congo (DRC) to Uganda (Keigwin et al., 2016; Omeja et al., 2014, 2016), and this causes an increase of human-elephants conflict. Although elephants in Africa have become locally overabundant, populations of forest elephants are declined by 62 % between 2002 and 2011, and 30 % of their geographical range were lost because of human pressure such as poaching (Maisels et al., 2013). As a result, conservation of elephants in Africa is crucial issue today. Moreover, recent genetic research documented hybridization between savanna elephant *Loxodonta africana* and forest elephant *L. cyclotis* in some areas, especially the border between Uganda and the DRC including KNP (Mondol, S. et al., 2015). From these points of view, we have to carefully monitor their current lifestyle in this area for their practical management and conservation. Thus, my research focuses on the behavior and genetics of the population of elephants in KNP which is suspected to be hybrids between *Loxodonta africana* and *L. cyclotis* for characterization of their current lifestyle. Through my two surveys in dry and rainy season, I conducted line transect censuses in various vegetation types to quantify their preference for current habitats. Distance sampling of dung counts was used for censuses, and analysis has been done using DISTANCE software. In addition, I collected these dungs and extracted their DNA. A skeletal specimen for morphological analyses and pictures from camera traps were also obtained. I will analyze these data and compare the results with the population in other area.

O-11

Allosuckling and male interference with nursing in wild giraffe

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Allosuckling has been reported in many species. Giraffe allosuckle in captivity but reports from the wild are sparse to non-existent. Although female giraffe become pregnant while lactating, the suckling stimulus generally prevents normal follicular maturation. I studied three nursing giraffe and their offspring in Katavi National Park, Tanzania. I found that allsuckling in wild giraffe was rare and “milk theft” hypothesis was supported. I also recorded a male that was mate guarding a female consistently interfered with nursing. I propose that this behavior could be a male reproductive strategy aimed at increasing the chances of resumption of estrus.

O-12

To Drum or Not to Drum? - Selectivity in Chimpanzee Buttress Drumming

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Wild chimpanzees have a fission-fusion social organization. Group size, composition and spatial distribution are constantly in flux. A vast repertoire of vocal and non-vocal forms of communication, including pant-hoots, screams, drumming, and body gestures, allows chimpanzees to effectively convey information in a socially and spatially dynamic setting. Chimpanzees drum on tree buttresses to produce acoustic signals heard over one-kilometer away. This behavior occurs frequently during travel and plays a significant role in long distance communication between separated individuals. To date, no studies have taken a landscape ecological perspective to examine the spatial and ecological factors influencing drumming behavior that may be critical for successfully conveying movement patterns. The factors influencing this behavior can be divided into three categories: location characteristics, tree characteristics, and buttress characteristics. This study focuses on the Seringbara community of unhabituated chimpanzees in the Mont Nimba Strict Nature Reserve, Guinea, Africa. Trees used to drum on by chimpanzees (drum trees hereafter; n = 24) were identified and the following data were collected: tree species name, circumference, diameter at breast height (DBH), number of buttresses, and buttress surface area. Tree availability plots (n = 20) were placed around each drumming tree to assess the availability of potential drum trees. Within these plots (20 x 20 m), all trees with a DBH ≥ 10cm were measured. If trees had buttresses but no evidence of being used for drumming (control trees), they were measured as potential drum trees. Preliminary results indicate that chimpanzees select for certain tree and buttress characteristics. Chimpanzees prefer to drum on trees with greater circumference, greater DBH, more buttresses, and on buttresses with greater surface area. More data collection and analyses are needed to address location characteristics and to further assess tree and buttress characteristics. These preliminary findings provide a framework for addressing how chimpanzees perceive and utilize their landscape for long-distance communication. Approaching chimpanzee behavior from a landscape ecology perspective will contribute new insights into the behavior of chimpanzees during long distance communication and travel and thereby help inform landscape management and conservation practices.

O-13

Activity report of my D1/L3 year

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I will report my activities in this academic year 2017-2018. My objective of this year was to get a research permission to conduct field-based studies in Brazil. For this purpose, I needed to submit a research proposal to National Institute of Amazon Researches (Instituto Nacional de Pesquisas da Amazônia, INPA) in Manaus, Brazil, and needed to get an approval from this institute.

I visited Brazil twice in 2017 in order to proceed this process. In August, I joined 17th Brazilian Congress of Primatology held in Pirenópolis, state of Goiás. I discussed my research plan with my Brazilian supervisors (Prof. Wilson Spironello and Prof. Adrian Barnett, INPA) and the other researchers who have been engaged in primatology in South America for years. Based on those discussions, I wrote the draft of the research proposal. In October, I returned to Brazil and corrected the draft talking directly with my supervisors again. I submitted it to INPA in the middle of December 2017, and now it is under the review process by a Brazilian reviewer.

In my research proposal, I wrote a study plan aimed to clarify the developmental process of the specific feeding behavior of golden-fased saki monkey (*Pithecia chrysocephara*). While many of primates eat ripe pulp as the main food, *Pithecia* and the relative taxa harvest immature fruits, and eat the immature seeds inside the fruits as discarding the pulp. Although it is known that adult individuals are morphologically and behaviorally well adapted to seed eating, this feeding habit should be still “difficult” for immature individuals, because seeds seem relatively much hard-to-process food compared to mother’s milk or fruit pulp. How do they shift from mother’s milk to trees’ seeds? To answer this question, the study will focus on the following four points, (1) The factors influencing dietary differences between ages in P. chrysocephala, (2) Energy intake and expenditure balance, (3) Foraging synchronicity and co-feeding behavior, and (4) Food transfer from the mother.

I am going to conduct some preliminary experiments in Japan Monkey Center in March 2018, and hopefully I am going to Brazil by the end of April 2018 to start my data collection.

O-14

Parasites in Fragments
Parasite Diversity and Distribution in Red-Listed Primates

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Anthropogenically driven biodiversity loss is a hallmark of the Anthropocene, an epoch characterized by rapid global changes and declines in local species abundance. Parasites are a big part of biodiversity, and although remarkably adapted to exploit small discontinuous habitats (a.k.a. hosts), they are equally threatened by habitat loss and fragmentation. Here, we replicate an earlier study looking at the relationship between parasite host range (generalist vs. specialist parasite species), host threat status, number of infected individuals (parasite prevalence) and number of parasite species infecting a given host (parasite richness), considering two types of parasites (helminths and protists) infecting primates. Taking threatened hosts as a proxy for shrinking habitats, we expect that isolation of habitat fragments results in decreased numbers of parasite species, with specific parasites being more endangered by fragmentation processes. Using an extensive dataset on primate parasites, we found that similar to the previous study, parasite richness was lower in fragmented habitats. In contrast to the previous study however, we observed a significant relationship between parasite prevalence and habitat fragmentation, mediated by parasite host range, i.e. fragmented habitats harbor a higher proportion of generalist parasites. These differences in prevalence of specialist versus generalist parasites in continuous versus fragmented habitats (here threatened versus non-threatened hosts) likely reflect changes in resource distribution and heterogeneity, resulting in disturbances in parasite communities. On the one hand, generalists might contribute to habitat degradation, a form of parasite pollution that disrupts parasite infracommunities, and on the other hand, they may be especially effective colonizers in the absence of specialists that could outcompete them. Changes in host-parasite associations are to be expected in the context of the Anthropocene, how they will drive the persistence and diversification of host-parasite systems, and impact host health and fitness, remains to be addressed.

O-15

The four pillars of captive elephant welfare in Asia

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The elephant is believed to have been tamed in Asia at least 4600 years ago by the Harappan culture. Captive elephants played a pivotal role in the rise and fall of Asian civilizations. Perhaps over a million elephants have been captured and used by humans over the centuries. With our contemporary understanding of the sentient nature of this animal, the need to ensure the welfare of the 15,000 or more captive elephants has become imperative. On the one hand, there is widespread support for complete cessation of capture of elephants from the wild. However, elephant-human conflicts continue to perpetuate and even escalate in many regions of Asia to the detriment of conservation. With wild elephants increasingly moving into human settlements and production areas, one option to mitigate conflicts is to capture a limited number of such elephants. This option must obviously be exercised with great caution but is already becoming inevitable in many parts of India. This management imperative is bringing into sharp public focus the need to considerably improve the welfare standards for elephants in captivity. In this talk I would argue that the four pillars on which we have to develop the framework for elephant welfare are setting standards for (i) the capture of elephants from the wild, (ii) humane training of elephants, (iii) elephant husbandry including nutrition and health care, and (iv) acceptable use of captive elephants.

O-16

The lives of elephants in the wild and in captivity

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The biology of wild elephants in Africa and Asia is shaped by their evolution and their life in natural ecosystems; their life in captivity should be based on knowledge of that biology. A key source of information on elephant biology is the Amboseli Elephant Research Project (AERP), based in southern Kenya. The 40-year study has provided considerable knowledge about African savanna elephants, and this information is also indicative of the biology of African forest elephants and of Asian elephants, with which they share many important similarities. In this presentation, I communicate some of this understanding, based on my experiences with the AERP and with research and conservation of elephants in other parts of Africa and in captive situations around the world.

Key findings about the lives of wild elephants show that they:

- need a lot of space: Home ranges are 100 – 1,000km^2 in area and they walk an average of 10km per day in search of food and other resources.
- are occupied with continual foraging challenges, as they search for and process plant material for up to 18 hours every day.
- have a complex social environment, maintaining close bonds with relatives and "friends" of their own choosing, in family and bull groups and mixed herds
- are intelligent and emotional. They have a deep, learned knowledge of social relationships and food and water sources, and will play with and care for young, show joy at social reunions and grieve for lost companions.
- are adapted to hot tropical climates, not cold temperate winters.

Captive conditions should acknowledge and attempt to accommodate as far as possible these basic needs. Elephants suffer physical and psychological health problems if their needs are not met.

The best practice guidelines developed by sanctuaries and zoos provide some approximation of elephants' needs. The better sanctuaries and zoos in Australia, Europe, North America and Asia may offer a reasonable life for some captive elephants, but there are many substandard examples in all parts of the world, with much room for improvement.

A survey of 14 zoos in Japan which have held solitary elephants was undertaken in early 2017. As elsewhere, Japan has zoos across the range of design and husbandry practice, from old, substandard facilities through "standard" but outmoded exhibits to improved and fairly progressive zoos. Recommendations are made for approaches that can be taken in the short, medium and long term to improve the lives of elephants in Japan's zoos.

O-17

Current practice and future direction of elephant projects at Kyoto City Zoo

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Since 1907, Kyoto City Zoo has cared for elephants. Currently, we have five Asian elephants, including a female elephant who has been living in the zoo since 1979 and four immature elephants provided by the government of Lao People's Democratic Republic (PDR) in 2013, as part of a collaborative “elephant breeding project” between Japan and Lao PDR. The four elephants were born in a captive environment and raised by their biological mother until weaning in Lao PDR. The elephant breeding project aims at breeding elephants and contributing to conservation of wild elephants, by applying the knowledge and techniques obtained from our activities to protect elephants and their wild habitat in Lao PDR. In this presentation, I will introduce the current practice and future direction of care and management of the elephants, in addition to other related activities at our zoo, such as research, breeding and welfare assessment projects.

O-18

Effect of Environmental Enrichment on the Behavior of Amur Tigers and the Interaction between Tigers and Zoo Visitors

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Zoo animals are often bred in environments that are significantly different from their original habitats. As a result, abnormal behaviors such as pacing around in the exhibit, shaking the body in front and back, left and right, coprophagy and regurgitation may occur. Among them, pacing is common in large felid species such as tigers. Environmental enrichment is a variety of devices for improving the welfare of zoo animals and is considered important for decreasing pacing. Several factors such as the presence or absence of enrichment and the influence of visitors are involved in the pacing, but such factors were rarely investigated simultaneously. In this study, we investigated the effectiveness of enrichment and the factors influencing the behavior of captive Amur tigers (*Panthera tigris altaica*).

We observed the behavior of 3 amur tigers in the Kyoto city Zoo and examined the effect of types of enrichment, temperature and number of visitors on behavior. The result indicates that there are individual differences in the preference of enrichment. Moreover, as the maximum temperature gets higher, the pacing frequency decreases and the resting frequency tends to increase. The influence of the visitor effect is not clearly seen as much as that of the temperature. It can be said that temperature is more important as a factor influencing the behavior of the tiger. Since there are individual differences in the preference of enrichment, it is considered that performing multiple enrichment is useful for tigers, and is helpful in grasping individual preferences.

Furthermore, we plan to conduct a survey of visitors to investigate what kind of impression they have with animals and zoos. The staff will talk about the tiger in front of the exhibition and then we will ask them to answer the questionnaire. The talk will be done in 2 conditions: when the tigers are using enrichment devices and when they are resting or pacing. We want to find out what kind of difference will appear in the questionnaire among the 2 conditions.

O-19

Habitat use of forest elephants (*Loxodonta cyclotis*) in and around Moukalaba-Doudou National Park, Gabon

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Nowadays, the conflicts between elephants and humans have become serious. The elephant population has declined because of poaching in Africa. On the other hand, farmers are suffering from crop raiding by elephants. The objective of this study is to examine how elephants use human area.

I conducted trail survey in and around Moukalaba-Doudou National Park, Gabon, from August to October 2017. Fifty five quadrats (100 m x 100 m) were established to quantify elephant trails, and all the trails in the quadrats were followed and located using GPS. Path width was measured at 20 m intervals, and trail type was classified based on plant appearance on the trails. The location of elephant signs such as dungs, food marks, footprints was recorded. I analysed the trails with the elephant signs.

The density of elephant path was higher in secondary forests than in savanna. The path width was wider in secondary forest than in riverine forest and savanna. The elephants probably use secondary forests more often than other environment for feeding.

Around the plantation, trails were less maintained than around village and in the park. Elephants may follow the well-used trails to reach the village, and then wonder around to seek access to the plantations.

O-20

How do giraffes use shady/sunny places?

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Better understanding of habitat use in giraffes helps their protection and conservation, but there are insufficient observations on shade use of giraffes. This study examined possible sex difference in how giraffes use shady and sunny places. I collected 89 hours of focal animal samples among 78 identified giraffes. I analyzed where feeding and ruminating behavior occurred relative to the ambient temperature. I found that males fed at both shady and sunny places. Males remained for longer periods of time in the shade than females, but did not show a preference for ruminating in shady or sunny areas. Females mainly fed in sunny places. When the ambient temperature in a sunny place was over 40℃, females often ruminated in the shade, probably to avoid overheating. In conclusion, my data revealed that sex differences exist in shade use among giraffes that might relate to their body size and feeding behavior.

O-21

Tooth rakes on wild Indo-Pacific bottlenose dolphins (*Tursiops aduncus*): a possible marker of their social behavior.

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Wild dolphins have many and various types of wounds and scars on their body. These wounds and scars could tell us information about their behavior and ecology, indirectly. In this study, we analyzed tooth rakes on wild Indo-Pacific bottlenose dolphins (*Tursiops aduncus*) around Mikura Island, Tokyo, Japan, where long-term identification surveys of wild dolphins have been conducted using underwater video records. Although tooth rakes have been supposed to be formed by conspecifics and used as an indicator of aggressive behavior in previous studies, what kind of social behavior formed tooth rakes was not known. To identify the behavior related to the tooth rakes, we examined the amount and quality of tooth rakes and biting behavior. The observed tooth rakes could be classified into parallel type and single type, and linear type and curved type. Though no significant sex difference was observed in the amount of tooth rakes, males had more parallel tooth rakes than female. Distribution and type of tooth rakes also differed by sex and/or age classes. Adult males and subadult females tended to have more tooth rakes than other sex/age classes. Adult males tended to have much more tooth rakes in head and flukes than other part and they tended to have more curved tooth rakes. In contrast, subadult females tended to have much more tooth rakes in chest and peduncle than other parts and they tended to have more single and straight tooth rakes. The results suggested that the tooth rakes observed on adult males and subadult females were formed by different social behavior. The curved tooth rakes often observed on adult males suggest that these were formed by more aggressive biting behavior than those suggested by single and straight tooth rakes often observed on subadult females. We could observe two types of biting behavior, gentle rubbing by tooth and aggressive biting, though both of them were very rare.

O-22

How Can Community People Actively Participate in Community Conservation? : The Case of "Human-Gorilla Conflict Resolution Program (HUGO)" in Bwindi Impenetrable National Park, Uganda

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In Africa, community conservation (CC) has attracted a great deal of attention; however, the success of CC approaches still remains contested. In Bwindi Impenetrable National Park, Uganda, home to the mountain gorilla (*Gorilla beringei beringei*), the Human-Gorilla Conflict Resolution program (HUGO) began in 1998. HUGO members are local volunteers that gently push gorillas back to the forest from the community lands in order to mitigate conflicts between humans and gorillas. This study considers the possibilities and challenges of CC through analyzing the position and role of HUGO in mountain gorilla conservation in which various actors have involved. During 7 months of field work in 2016 and 2017, data were collected through participant observation, with 4 focus groups and semi-structured interviews with 43 HUGO members, 100 community people, and 6 park staff. Although some people complained about HUGO, the members were widely recognized for their contributions in crop damage reduction. The members had a variety of relationships with community people and park staff. When community people and the park staff were in opposition, HUGO often played a buffering role in the conflict. HUGO members were not seemingly motivated by economic or material benefits alone judging from the discourses with some members, which suggested their active participation and internalization of conservation ideas.

O-23

How do chimpanzees (*Pan troglodytes*) recognize and reply to the voice of other individuals?

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Primates use vocalization in their habitat. However, there are little studies of their auditory cognitive ability. I conducted two experiments with chimpanzees using sound stimuli. To communicate with others using vocalization, it is very important to distinguish voice of others from non-vocal sounds and understand their meanings and reply to them. I examined which acoustic features they use when they recognize voice of the other individuals in the first experiment. I first trained chimpanzees to distinguish between "chimpanzee's voice" and "pure tone". The chimpanzees were required to push the button on the same side of the speaker which played chimpanzees' voice, ignoring pure tone played simultaneously from the other speaker. Although the chimpanzees are under training, accuracy of one of four chimpanzees already reached nearly 90% in fourteen sessions. In the second experiment, I focused on the effect of vocalization on behavioral response. I conducted a playback experiment using three types of chimpanzee vocalizations (pant-hoot, pant-grant and scream) and white noise. Although still collecting data, so far, chimpanzees responded differently to each sound stimulus, such as making pant-hoot more frequently when hearing pant-hoot sound than the other sounds. These experiments will help to understand chimpanzee's auditory cognitive ability.

O-24

Detecting terrestrial mammals living around saltlick in Malaysia using environmental DNA

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Wildlife monitoring is important for conservation of endangered animals. Traditionally, physical identification methods such as camera trapping or direct observation are used for this purpose. However, tt is difficult to identify some species because of their small body size and/or other reasons. Environmental DNA (eDNA) analysis is high sensitivity and cost-effective method to detect wild animals. This method has mainly been developed to detect aquatic animals, especially endangered or invasive species. Moreover, there are some reports that eDNA analysis can be used for terrestrial mammals monitoring.

Here, we applied this newly-developed technique to detect terrestrial mammals living around saltlicks in Temengor forest reserve, Perah, Malaysia. Our results were compared with the monitoring data at those saltlicks obtained using camera traps. Based on these results, we will discuss about the pros and cons of the eDNA technique.

O-25

Characterization of bitter taste sensitivity of the two species of Sulawesi Macaques

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Sulawesi macaques are divergently evolved into 7 species within a relatively short period and live allopatrically on Sulawesi Island, which is isolated for million years long. Thus, it will be interesting to study functional genes which might reveal their specific-species difference. Bitter taste plays an important role in avoiding ingestion of toxins and induces innate avoidance behaviors, which might evolve to reflect species-specific diets during mammalian evolution. In addition, it was recently reported that the receptors are involved in the immuno-system against bacteria and parasites. One of the genes is TAS2R38, receptor for bitter compound Phenylthiocarbamide (PTC) and some bacterial secreting compounds. We conducted PTC avoidant behavior of individuals of *M. hecki* (N: 13), *M. tonkeana* (N: 12). 4 individuals of *M. tonkeana* show low or no sensitivity in behavioral test. So far, conducting genetic characteristics of TAS2R38, it was found that amino acid change at position 117, 130, 134 were specific in 4 PTC non-taster of *M. tonkeana* individuals. We predict those sites are responsible for non-taster phenotypes. Functional analysis is conducted to confirm phenotype of low or no sensitivity in protein level. More genetic and functional experiments will be conducted to clarify non-taster phonotype and to understand feeding ecology and environmental adaptation.

O-26

Genetic and functional analysis of PKD1L3/PKD2L1 putative sour taste receptor in Sumatran orangutan

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Sumatran orangutan (*Pongo abelii*) eats unripe fruits compared to sympatrically living primates (Ungar 1995), which are sourer than ripe one (Rekha et al., 2012). In fact, when I ate fruits which are food items of wild eaten by orangutans in Sumatra, some were sour for me. Therefore, I hypothesized that sour taste of orangutan is different from human at the molecular level.

Sour taste is recognized by sour taste receptor on the tongue and the PKD1L3/PKD2L1 complex is suggested as a candidate protein of the sour taste receptor in mouse (Ishimaru et al., 2006). This receptor is studied well in mouse but it is unknown in other species, including human. Study about PKD1L3/PKD2L1 in other species is important to clarify mechanism of their sour taste detection. In this study, I performed genetic and functional analysis of PKD1L3/PKD2L1 in orangutan, human and compared them with mouse.

Complementary DNA of PKD1L3 and PKD2L1 was amplified from the total RNA extracted from orangutan tongue. Genetic analysis showed differences of exon structure in both PKD1L3 and PKD2L1 among these species.

Functional analysis was performed by calcium imaging. Mouse PKD1L3/PKD2L1 responded to sour compound (4.0 mM citric acid). However, PKD1L3/PKD2L1 of orangutan and human did not respond. To evaluate the function of PKD1L3 and PKD2L1 in orangutan and human, I analyzed interspecific combination of PKD1L3 and PKD2L1 among these three species. As a result, it was shown that orangutan and human PKD2L1 had function as a sour taste receptor with mouse PKD1L3 but not with their own PKD1L3.

This *in vitro* study revealed that orangutan and human PKD1L3/PKD2L1 did not respond to citric acid. This suggests that PKD1L3/PKD2L1 do not work as a sour taste receptor in orangutan and human. There are possibly unknown sour taste receptors in orangutan and human.

O-27

Vocalization and associated behavior of free-ranging Indo-Pacific Bottlenose dolphins (*Tursiops aduncus*) in Jeju Island, Republic of Korea: A preliminary description

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Dolphin vocalization mediates complex social behavior and navigation while obtaining information on the environment. Indo-Pacific bottlenose dolphins, *Tursiops aduncus*, produce numerous type of acoustic emission including clicks, pulsed vocalizations, and tonal calls that includes the diverse repertoire of whistles for communication. Vocalization and associated behavior of a geographically separated population of *T. aduncus* exhibit variation, therefore the baseline study is a necessity when investigating a novel population. A relatively unknown and unhabituated population of *T. aduncus* is found in the largest island of the Korean peninsula, Jeju Island. This population utilizes inshore habitat around the island and exhibit geographic isolation. A baseline study of vocalization and associated behavior was conducted to collect various behavior-specific vocalization. A land survey performed with a DSLR with a 400mm USM lens, and an aerial survey using UAV were undertaken to obtain both surface and underwater behavior of the monitored population. Simultaneously, an acoustic survey was conducted with multiple automatic underwater sound recorders (A-tag and AUSOMs). For the first time, a preliminary description of undisturbed vocalization and associated behavior of Jeju dolphin population is made. Using this baseline data, fine-scale investigation of vocalization and behavior will be conducted in the future. Furthermore, the effect of a suddenly increased inshore anthropogenic activities on the vocalization and behavior of Jeju dolphin population will be monitored as part of the long-term conservation plan.

O-28

Home Range Changes of Yunnan Snub-Nosed Monkey (*Rhinopithecus bieti*) in Laojun Mountain National Nature Reserve

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In this study, we assessed seasonal and annual changes in the home range of Yunnan snub-nosed monkeys (*Rhinopithecus bieti*) in Laojun mountain, China. The study was carried out in three ways for data collection: 1) 72 trap cameras, 2) drone observation and 3) tracking on foot for 13 months. Spatial analysis combining the GPS data on grid-cell (with the quadrat sizes of 500m by 500m) was conducted to investigate home range change of this monkey group. We also compared our result with the data for past 11 years of tracking record (Data from The Natural Conservancy Lijiang Office) in Laojun mountain. In general, their entire home range moved northwards year by year. Hiking trail and grazing in the south part, seasonal forest products collection, road construction outside the north boundary were the main influence factors. The area of the home range was closely correlated with the distribution and abundance of food resources in the whole raining season. This group was recorded staying in the high altitude north area in almost 3/4 of the dry season. Compare with extended loud noise of road construction from north the occasionally encounter with human in the south was more threatening to Yunnan snub nosed monkey. They will suffer from increasing influence by the development of local ecotourism.

O-29

Introduction to Serra D'Arga horse project

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In 2015, we have established a new research site for the study of wild horses in Serra D'Arga mountain, a community forest in Viana do Castelo, northern Portugal. This new project is a collaborative work among Kyoto University, Portuguese Universities and local organizations, and Sorbonne University of Paris. There are feral horses across Portugal, living and reproducing in the wild environment. The breed of these horses is called garrano, and the number of garrano individuals is estimated to be around 2000. Although there have been numerous studies on horses from veterinary or agricultural perspectives, these studies are mainly on domestic captive individuals; there have been much fewer studies on behaviors of free-ranging, wild individuals. Horses are interesting species as once they are in the wild they tend to form a stable social group with typically one stallion surrounded by multiple males. The long-lasting stable social structure is unique among ungulates, and this is similar to the society of primates including humans. Therefore, studies on behavior and social structure of horses will shed a new light on the evolution of social behavior. Another feature of the situation of Serra D'Arga is the presence of wild wolves, which are the predators of the horses. We will be able to reveal the pray-predator relationship and its influence on their ecology and social behaviors. My talk will illustrate the general sketch of our project which includes the investigations of social relationships, collective movements, and developmental change, as well as public education for the local community.

O-30

Framing Cooperation and Biodiversity Knowledge with Africa: the UNESCO Chair in Biodiversity Safeguard for Sustainable Development

Helena Freitas

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UNESCO Chair Holder in Biodiversity Safeguard for Sustainable Development

The United Nations Educational, Scientific and Cultural Organization (UNESCO) mission is to contribute to the building of peace, the eradication of poverty, sustainable development and intercultural dialogue through education, the sciences, culture, communication and information. Launched in 1992, the UNITWIN/UNESCO Chairs Programme promotes international cooperation by building inter-university networks and encouraging the transfer of knowledge across borders. In 2014 an agreement was signed amongst the University Coimbra and UNESCO for creating the UNESCO Chair in Biodiversity Safeguard for Sustainable Development. This Chair seeks to:

- Implement and support a network of researchers, higher education and R&D institutions, in the fields of biodiversity, ecology, conservation and sustainable development;
- Provide training and resources for students and researchers by promoting short-term internships, workshops, and human resources exchange among partner institutions;
- Create and improve digital platforms for knowledge sharing;
- Foster science communication and outreach activities - Building bridges between academia and society;
- Increment inter-university cooperation and strengthening of scientific networks within C.P.L.P. (Community of Portuguese-Speaking Countries).

I will present some of the on going projects in cooperation with the C.P.L.P. countries in the scope of our UNESCO Chair, namely: the creation and setup of the Botanic Garden of the Faculty of Natural Sciences of Lúrio University, in Pemba, Mozambique; the Master in “Ecology and Natural Resources Management”, the first master course in ecological sciences and the first inter-university master course in Angola; the training activities in São Tomé e Príncipe within the project “Herbário Nacional: Referência para o Conhecimento e Conservação da Diversidade das Plantas de São Tomé e Príncipe” financed by the Small Grant to the Guinean Forests of West Africa Biodiversity Hotspot, from the Critical Ecosystem Partnership Fund; the multi-project collaboration with Gorongosa National Park – ecological field studies, paleontological prospections, historical genesis of the Park , and sustainability.

O-31

Differences in spatial positioning of individuals among horse groups

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Animal behavior studies have revealed that individual health, social relationships, and spatial positioning interact to influence group dynamics. However, there are no studies assessing whether the spatial positioning of individuals is consistent across group of the same species and in similar environments. For this study, I assessed whether the spatial positioning of individual horses (*Equus caballus*) differed among groups with the same number of horses in similar environmental conditions. Three feral, horse groups were followed in Serra D'Arga, Portugal. For each group, approximately 65 drone images were analyzed to examine the nearest neighbor distance between individuals and level of dispersion. Results show that the nearest neighbor distance between individuals was similar for all three groups (2-3 body lengths). Additionally, the level of dispersion was different between the groups. In conclusion, horses may have an innate behavior to maintain a certain distance from nearest neighbors, i.e. personal space, while the variation in levels of dispersion between all individuals indicates that group assemblages are influenced by individual characteristics.

O-32

Social behavior of the stallion and the maintenance of the harem group: a study on feral horses in Serra D'Arga, northern Portugal

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Feral horses (*Equus caballus*) form a stable harem group, which is not observed in many other ungulates, and maintain long-term social relationships with group members. However, we still do not know the mechanism how the stallions maintain their harem groups. As horses are prey animals and forms harem groups, it is important to prevent the threats such as the predators' attack and the other stallions' approach. Quick detection and escape from these threats might be an effective way for stallions to maintain their harem groups. Thus, I have studied two types of social behavior of the stallions: vigilance, behavior to alert the threat, and herding, behavior to gather the females. There are about 34 groups of feral horses in the mountain, Serra D'Arga, in northern Portugal. The behavior of horses was observed by direct observation and by video-recording using a camera and a drone, in 2016 and 2017 for about two months each. The change of group members was also recorded in all observed harem groups. In this presentation, I will talk about the vigilance and herding of the stallions, and will discuss about the relationships between these behaviors and the group maintenance, based on the latest results.

O-33

Investigating the causes of adult and foal disappearance and mortality in feral horses in North of Portugal: A preliminary approach on prey-predator interactions

Renata S. Mendonça
Primate Research Institute, Kyoto University

The equine social systems are characterized by harem groups which consists of one or a few males with multiple females, and bachelor groups. Equids are unique among ungulates because of their stable bisexual groups, including their female-female bond. Garranos, a breed of ponies co-existing with wolves in the North of Portugal follows a similar pattern. Feral horses constitute about 70-80% of the wolves' diet in this area, however this population is also threatened by human activities. These activities may be interfering with the group stability and, therefore, exposing the individuals to predation and other threats. This study aims to combine demographic, genetic and behavioral data to examine: a) the group size and composition effects on female reproductive success, maternal care and foal survival b) the factors determining wolf predation in horse herds in relation to horses' behavioral traits (e.g. band size, composition, paternity) and risk of wolf predation (e.g. distance of grazing pastures to wolf core-areas), and c) the human interference and management politics effects on the dynamics and survival of the individuals. Data collection is still ongoing in the mountain of Serra D'Arga, Northern Portugal. However, as the behavioral data is under analysis, I present basic demographic data collected in the breeding seasons of 2016 and 2017. In 2016, 27 groups (including harem and bachelor groups) were identified, 45 foals were born and 35 of them disappeared or died. In the year of 2017, 36 groups were observed, 38 foals were born, but none of them survived. From the breeding season of 2016 to 2017, about 11% of females transferred between groups, however the rate transfer and changes in group composition increased drastically after human interference. Finally, I present the methodology that we are developing to study the interactions between horses and wolves, in collaboration with the Portuguese wolves' researchers.

O-34

Genetic polymorphisms and personality traits in horses:

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Polymorphisms in genes related to neurotransmitters or hormones have been associated with individual differences in behavioral traits in many animal species. In horses, polymorphisms were found in several candidate genes coding receptors for dopamine, serotonin, oxytocin and so on. Several researches show significant correlations between these polymorphisms and horse personality traits evaluated by questionnaire surveys. For example, a non-synonymous single nucleotide polymorphism (SNP) in the serotonin receptor 1A gene (HTR1A) was associated with tractability in one-year-old Thoroughbred horses reared at a training center for racehorses. However, it is still unclear whether the SNP affects the function of receptors. In future studies, approaches using cultured cells may be useful to clarify the function of polymorphisms.

O-35

"Living in Harmony with Nature" ~ For the Survival of this Planet ~

Masahiko HORIE
Foreign Ministry of Japan
Wildlife Research Center, Kyoto University, Kyoto, Japan

Our planet is at a crossroads and human survival is at stake.

The planet holds a population of over 7 billion with over 1 billion people under the poverty line. We need to eradicate poverty by supporting economic development efforts of the developing countries.

However, it often happens that the development effort takes place to the detriment of natural environment and increases biodiversity loss on this planet.

This struggle between environment and development is aggravated by the global warming generated by the anthropogenic emissions of greenhouse gases.

We need to protect the climate system and the biodiversity for the benefit of present and future generations of humankind.

To cope with this situation, Paris Agreement on Climate Change and SDGs (Sustainable Development Goals) were respectively adopted in 2015. Some of the key words are mitigation, adaptation and sustainability.

Ambassador Horie who participated a series of COPs on Climate Change and has been working as Councillor of IUCN (International Union for Conservation of Nature) will lecture on the efforts by all the peoples of the world to overcome these unprecedented challenges to our human kind.

O-36

Snow leopard conservation: from local action to global policy and governance

Koustubh Sharma
Snow Leopard Trust

Snow leopard is the apex predator of Asia's high mountains and an indicator of a healthy and resilient ecosystem. Found in 2 million km2 spread across 12 countries, its habitat, the mountains are a powerful thread that bind and integrate these countries in terms of culture, spirituality and lifestyle. Research shows that its large home-ranges often extend beyond international borders. Threats to the species are dynamic and range from retribution killing and illegal trade to poorly planned infrastructure and climate change. Only a handful of Protected Areas across its range are big enough to support viable snow leopard populations, thus requiring landscape level multidisciplinary approach. Working with local communities that live in our last remaining natural areas, are dependent on these ecosystems, and are most affected by policies and actions designed to protect biodiversity are at the center of most successful snow leopard conservation programs. For long the snow leopard had been one of the least studied felids. However technological innovation and statistical development is gradually improving our understanding of the elusive species and its ecology in recent times.

In 2013, governments of 12 snow leopard range countries came together and endorsed the Bishkek Declaration to form a unique alliance in partnership with international and national organizations for conservation of snow leopards and their mountain ecosystem. The Global Snow Leopard and Ecosystem Protection Program was launched with its Secretariat in Bishkek, Kyrgyz Republic to coordinate its implementation. The program's goal is to protect snow leopards in at least 20 multi-use landscapes through climate smart management plans using integrative approach of securing livelihoods and facilitating green development. Many of these landscapes share boundaries with neighbouring countries, thus opening the opportunity for trans-boundary dialogue, information sharing and coordinated management of snow leopard landscapes. The GSLEP program facilitates systematic cross-sectoral planning, implementation and funding to conserve snow leopards and ensure the cultural, social and economic well-being of the mountain communities. The program draws its strength from localized action through successful research and conservation programs, and global thinking through information sharing and policy development.

O-37

Snow leopard research and conservation programs in the Kyrgyz Republic

Kubanychbek Zhumabai uulu
Snow Leopard Foundation in Kyrgyzstan

Despite being the apex predator being the focus of many scientists and conservationists, snow leopard has long been one of the least studied felids. Only recently technology has enabled it to be studied better with its needs and threats understood more clearly. The Snow Leopard Foundation in Kyrgyzstan is a partner of the Snow Leopard Trust which is one of the world's oldest and largest organizations working on snow leopard conservation and research.

The Kyrgyz snow leopard conservation program can be broadly classified into four categories, viz. community-based conservation, conservation oriented research, conservation education and conservation policy and governance. Understanding the need for snow leopard conservation programs to focus on building partnerships with local communities, a livelihood based, women centric conservation program, the Snow Leopard Enterprise is being implemented for more than 14 years in the heart of the Central Tien Shan Mountains in Kyrgyzstan, also considered to be the finest snow leopard habitat in Kyrgyzstan. The program has recently been complemented by expanding the partnership to build predator proof corrals to prevent livestock depredation. Nearly 1,000 sq km of these mountains are also being monitored by more than 40 motion detecting, infrared, digital cameras for the past three years. Systematic analysis of images using spatial capture-recapture analyses reveals not only snow leopard density, but also its spatial variability at a fine scale. Co-management of a conservancy in partnership with the Government is being implemented in a snow leopard habitat to experiment conservation through sustainable land-use other than hunting. Lack of education and awareness across different target groups has been identified a key threat to snow leopards. To build capacity of frontline staff to tackle illegal wildlife trade and poaching, an institutionalized training program is being implemented with help from INTERPOL and Kyrgyz Government agencies. Periodic awareness and education campaigns are implemented in the country through engagement with schools, colleges and universities, as well as mass media. The Kyrgyz Republic is home to the Global Snow Leopard and Ecosystem Protection Program's secretariat, where our teams provide regular technical and logistical support to help convert research findings into policy by implementation of best practices for conservation.

O-38

Middle to large mammalian fauna in Danum Valley with camera trap and influence by fruit availability

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The Danum Valley in Sabah has remain valuable primary lowland dipterocarp forest. Various mammals are confirmed by the eco-tour around a sightseeing hotel called Borneo Rainforest lodge in this area. However, no full-scale fauna research has been conducted so far. Therefore, in order to clarify the mammalian fauna and its distribution, we conducted a wild life survey by using camera traps. According to a previous research by our long-term fallen fruit census, we found that fruit availability in Danum Valley was usually low for a long period while a large peak fruiting occurred irregularly. We also focused on which mammals changed with fruit availability and on how they changed as well.

Regarding the method, we set up 15 automatic cameras at equal intervals on a trail (11km in total) in the survey area, and replaced batteries and SD cards every month. By using the same trail, we also conducted a fallen fruit census to examine fruit availability every month. We did the survey in two periods, July 2010 - August 2011 and July 2014 - March 2016, which included the time when peak fruiting occurred. As a result, at least 32 species of mammals were confirmed. The species of the highest relative abundance index (RAI) were found to be mouse deer, bearded pig and sambar deer, which was in the descending order. In addition, although RAI was low, mammals like borneo elephant, sun bear, binturong, clouded leopard, pangolin, which had rarely directly been observed so far, were confirmed. Out of 32 species confirmed, there were 2 species of bearded pig and sambar deer that showed positive correlation with fruit availability. Adult bearded pig especially tended to have a high RAI with many infants during peak fruiting periods.

O-39

Bonobos in forest-savanna mosaic environment: development and perspectives of our newly launched wild bonobo research site

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We have launched a research project developing a new wild bonobo research site in Mbali/Malebo area in Democratic Republic of the Congo. The bonobo, as well as the chimpanzee, is one of our evolutionary closest relatives, and gives us good insights on human evolution and how we evolved from the separation from the Pan species. Interestingly previous studies suggested that bonobos are considerably different from chimpanzees in their cognition, behavior, and societies. These differences have often been explained by their dwelling environment; i.e. the bonobo evolved in and adapted to comparatively rich and stable tropical rain forests. Actually most of the previous studies on wild bonobos have been conducted deep in rain forests. Recently, however, surveys showed that a considerable number of bonobos inhabit in forest-savanna mosaic area, more climatic fluctuated and drier environment than the other wild bonobo research sites. In order to investigate the bonobos' behavior and societies in this environment, in collaboration with local NPO and villagers we have habituated and identified the bonobos in two groups. So far we have established a data collection system on a daily basis, and succeeded in filming bonobos utilizing savanna environment. In parallel efforts with direct observation, we have set trap cameras in the forests, which would be a powerful tool to know not only bonobo behavior but also the fauna in this newly established site. In this presentation, we will introduce the current situation and also our future perspectives.

O-40

The Bossou archive project: progress and future directions

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Video footage of wild chimpanzees (Pan troglodytes verus) from Bossou, Guinea, has been systematically collected for over 30 years and stored at the Primate Research Institute, Kyoto University. The Bossou archive project aims to digitise, secure and organise this data, preserving the archive for future generations and improving access for collaborative research. I update current progress of the archive work and present preliminary results from the first unified and fully automated pipeline for image-based face detection and identification of chimpanzees in the wild, using raw unedited video data from Bossou. This tool will have numerous applications, including the censusing and monitoring of wild chimpanzee populations from camera traps, and automated processing of large video datasets.

O-41

Comparative and developmental studies on rhythmic coordination

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My research aims to understand the evolutionary and developmental origins of the ability for rhythmic coordination in humans. In a comparative study, which was conducted in Kyoto University Primate Research Institute, I examined chimpanzees and humans producing rhythmic tapping movements with a conspecific partner in close proximity. The results show that chimpanzees and humans share the ability to adapt the tempo of rhythmic movements in response to a partner, whereas the ability for quick and accurate adjustment was observed in humans but not in chimpanzees. In a developmental study, which is ongoing study in Myowa Lab from Graduate School of Education, Kyoto University, I am examining human children aged 1.5, 2.5 and 3.5 years. During the task, the children performed spontaneous drumming behavior with their mothers. Preliminary results show that the ability to adapt the tempo of drumming movements in response to their mothers develops between 1.5 and 2.5 years old. Based on these findings from both comparative and developmental studies, I will discuss how the uniquely human ability for rhythmic coordination emerged.

P-01

Development of combinatory manipulation and tool-use repertoire in great apes and humans

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Object manipulation can be used as a comparative scale of cognitive development among primates including humans. Some previous studies focused on object manipulation and/or tool-using behavior as an indicator of cognitive abilities in chimpanzees and human children. Particularly, combinatory manipulation is a precursor of tool-using behavior and starts at around 10 months of age in humans. Mother-reared chimpanzees started combinatory manipulation at 8-11 months of age which was comparable to humans. Inserting action was commonly observed in chimpanzees from an early age. However, stacking action appeared later in chimpanzees' development. This pattern may reflect the tool-use repertoire of wild chimpanzees where tool-use behaviors involving the inserting action are wide spread among most of the wild chimpanzee populations. Stacking-block behavior started at around one year of age in humans and at two years and seven months in one out of three chimpanzees. All three chimpanzees started to stack up blocks at three years and one month following trainings by humans. After the acquisition of stacking action, both chimpanzees and human children showed similar performances in tasks using blocks of various shapes which were designed to test their physical understanding. Similarly, both chimpanzees and human children showed trial-and-error strategies in combining cups into a nesting structure. Direct comparison between humans and chimpanzees revealed fundamental similarities in the domain of physical intelligence. Apart from chimpanzees, developmental data from other species of great apes remains limited. Through our preliminary investigation, all species of great apes showed combinatory manipulation in captive settings with some variation in the timing and order of development. Although all four species of great apes possess the fundamental cognitive ability of performing combinatory manipulation in captivity, socio/environmental factors may contribute to the tool-use repertoire and frequency in the wild.

P-03

Evidence for self-domestication in wild coyotes?

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Abstract:

While the evolution of cognition is still poorly understood, the self-domestication hypothesis proposes that psychology can evolve due to natural selection on temperament that leads to expanded developmental windows and cascading phenotypic effects. This hypothesis has been proposed to apply to dogs, bonobos, and even humans based on evidence for increased prosociality and a host of phenotypic traits resembling by-products of experimental domestication. To date all evidence in support of the self-domestication hypothesis has comes from experiments and inferred past selection pressure in wild animals. No study has tested for natural selection favouring increased prosociality in current populations of wild animals. In the past decades many animals have been rapidly recolonizing environments densely populated by humans. Urbanization is predicted to select for nonhumans that are non-aggressive, less fearful, and even attracted to densely populated areas and humans more generally. Coyotes represent an ideal candidate species to test this hypothesis as they have increasingly expanded into new urban habitats in recent years. Coyote behaviour is likely influenced by human activity, they are displaying highly plastic behaviour in feeding and sleep patterns, hybridizinghybridizing with other canids, and are undergoing these behavioural changes very rapidly relative to evolutionary time. As an exploratory test for signals of coyote self-domestication in areas of varying human influence, we used data from camera traps deployed across North Carolina. We coded coyote behaviour toward the camera (notice/approach) to test for changes in temperament associated with level of human density. Initial results suggest wild coyotes have a tendency to approach trap cameras less often in the most remote habitats than coyotes in exurban areas. Although the findings are not conclusive, they provide reason to further test for a link between differential coyote temperament and degree of urbanization. It also suggests the feasibility of using behaviour recorded by camera traps to test predictions generated by cognitive evolutionary theory. This initial research provides the first results consistent with self-domestication in modern species undergoing rapid evolution due to natural selection.

P-06

Facial discrimination and attentional bias towards faces in chimpanzees

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Faces are one of the most important and salient stimuli for primates. They provide information about identity, age, gender and emotion. The ability to attend to information in faces and respond to it discriminatively is essential for survival. I will present the results of two studies on face processing in chimpanzees (*Pan troglodytes*) conducted at the Primate Research Institute, Kyoto University, and discuss future research directions.

The first study systematically examined the factors important for visual discrimination between primate species faces including: colour, familiarity, and perceptual similarity. Five adult chimpanzees were tested on their ability to discriminate identical and categorical (non-identical) images of different primate species faces in a series of touchscreen matching-to-sample experiments. After excluding effects of colour and familiarity, difficulty in discriminating between different species faces was best explained by their perceptual similarity to each other. Categorical discrimination performance for unfamiliar, perceptually similar faces (gorilla and orangutan) was significantly worse than unfamiliar, perceptually different faces (baboon and capuchin monkey). We conclude our chimpanzees appear to perceive similarity in primate faces in a similar way to humans. Information about perceptual similarity is likely prioritised over previous experience or a conceptual representation of species for categorical discrimination between species faces.

The second study investigated attentional bias towards emotional faces using the dot-probe task. In this task, two images appear simultaneously on a screen for a brief period. Typically, one of the images is threatening, whilst the other is neutral. After the stimuli disappear, a dot (probe) appears in place of one of the stimuli. Allocation of attention is measured by the time taken to touch the dot. If the dot appears where attention is allocated, faster response times are recorded. Eight adult chimpanzees participated in a series of touchscreen dot-probe tasks. In the emotional condition, images of emotional chimpanzee faces were paired with neutral faces, whilst in the control conditions objects and colours were presented. The task was successful in measuring broad attentional biases towards faces, objects and colours, but may not be sensitive to emotional content in faces.

Finally, I will discuss future research directions. The dot-probe task uses reaction times as the primary measure to detect attentional biases. This assumes gaze location directly corresponds to manual responses. However, more direct measures of visual attention are available, such as eye-tracking technologies, which can track real-time eye movements during attentional tasks. I propose to use eye tracking to gain more accurate measures of attentional bias during the dot-probe task and compare these with manual responses.

P-08

Triadic awareness predicts partner choice in male-infant-male interactions in Barbary macaques

Barbora Kuběnová[1,2,3*], Martina Konečná[1], Oliver Schülke[2] and Julia Ostner[2]
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[2] *Department of Behavioral Ecology, Georg August University Göttingen, Germany*
[3]*Kyoto University Primate Research Institute, Inuyama, Japan*
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Social primates benefit by having information about their relationships with other group members. Experiments show, that they may also understand the relationships among other individuals. However, evidence of use of this capacity in natural context is limited to few types of interactions (e.g. coalition formation and redirected aggression).

The aim of the study was to find out, whether male Barbary macaques use triadic awareness in context of infant handling. Barbary macaques are known for intensive male-infant interactions and also triadic handling – ritualistic interactions during which two males approach each other in order to manipulate one infant together. We hypothesized, that male holding the infant reflects bonds between the infant and other males, when choosing a male as a partner for these interactions.

We based the analyses on ~1200 hours of focal observation of 12 infants of one group collected between April 2013 and September 2014 in Ifrane National Park, Morocco, that included ~ 600 triadic interactions.

The results of GLMM confirmed, that males used triadic awareness: 1/ Numbers of interactions among initiator-infant-receiver triads were predicted by strength of the infant-receiver bond and 2/ when two males were available as bridging partners, a male was more likely to be chosen as a receiver the stronger his social relationship with the infant relative to the other available male.

P-10

To carry or not to carry: changes in stress hormones in a case of dead infant carrying in Japanese macaques

Rafaela S. C. Takeshita[1*], Michael A. Huffman[1], Kodzue Kinoshita[2] and Fred B. Bercovitch[2]
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[2]*Wildlife Research Center, Kyoto University*
[*]rafaela.takeshita.32c@kyoto-u.jp

Dead infant carrying has been reported in several species, but the physiological mechanisms underlying this behavior are unknown. Glucocorticoids (GC) are commonly used indicators of stress and energy costs, making them possible candidates for factors involved in carrying dead infants. We reported fecal GC (fGC) changes during pregnancy and postpartum in a Japanese macaque (*Macaca fuscata*) that carried her infant following its death on the 2nd day post-parturition for 20 days at Jigokudani Monkey Park (JMP), Japan. We used enzyme immunoassay to determine fGC concentrations. The monthly pattern of fGC levels in this female (N = 18 samples) was compared with five successful pregnancies (N = 58 samples) from females living at JMP and with two stillbirth cases (N = 18 samples) from the Primate Research Institute (PRI) at Kyoto University, Japan, in which the dead infants were removed from the mother at parturition. We sampled four cycling adult females from PRI (N = 7 samples) and five from JMP (N = 43 samples) to determine the baseline fGC concentrations in each study site. The results showed that in the case of dead infant carrying, fGC levels returned to baseline levels in the first month post-parturition, whereas in successful pregnancies, fGC levels peaked in the first month, possibly due to the suckling stimulus from the infant or increased energetic expenditures by the mother. In stillbirth cases, fGC concentrations ranged above baseline levels in the first and second months post-parturition. The high levels of fGC following parturition in stillbirth cases may be related to stress of the separation from their infant, in contrast with the dead infant carrying case, in which fGC levels remained low. Moreover, in comparison to successful females, pre-parturition levels were much higher than baseline levels, which might be an indicator of fetal death. Our findings highlight the potential adverse consequences of forced removal of a dead infant to the psychological stress of the mother.

P-12

Behavioral coordination of mother-infant pairs and mother-infant-sibling triads at the onset of travel in wild chimpanzees

Hiroko Sakuragi
Wildlife Research Center of Kyoto University

Chimpanzee mother-infant pairs always travel together. In addition, if the infant has an older sibling, the sibling frequently accompanies the pair. In chimpanzees, siblings are known to occasionally look after infants (Nishida, 1983). Here I compare the behaviors of mother-infant dyads and mother-infant-sibling triads in the attempt to show how siblings would affect mothers' and infants' behavior patterns at the onset of joint travel.

P-13

Allogrooming Body Site Preferences: A comparison between Wild and Captive Chimpanzees and Bonobos.

Morgane Allanic[1*], Misato Hayashi[1], and Tetsuro Matsuzawa[1,2]
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[2] *Institute for Advanced Study, Kyoto University, Kyoto, Kyoto, Japan*
[*] morganeallanic90@gmail.com

Bonobos (*Pan paniscus*) and chimpanzees (*Pan troglodytes*) frequently interact through social grooming, yet they show strong differences in overall sociality. For example, bonobos are more tolerant and show more face-to-face communication than chimpanzees. Moreover, wild and captive individuals of both species are expected to have differences in hygiene, particularly captive individuals are expected to have a lower parasite load than wild ones. Thus, we predicted that bonobos are more likely than chimpanzees to groom vulnerable body sites and in face-to-face positions and wild individuals are more likely to groom inaccessible body sites than captive individuals. Subjects were twelve captive chimpanzees and six captive bonobos from Kumamoto Sanctuary, Japan, seven wild chimpanzees from Bossou, Guinea, and fifteen wild bonobos from Wamba, DRC. We recorded body site and orientation for 122, 153, 132, and 166 grooming interactions, respectively. Preliminary results indicate that (1) bonobos groomed the head and face-to-face more than chimpanzees, (2) wild individuals of both species groomed inaccessible back regions more than captive individuals, and (3) the groomed body site was selected by the groomer not the groomee. This study showed that *Pan* species have different body site preferences reflecting the differences in their sociality and highlighting the importance of facial communication in bonobos. Additionally, the hygienic function of allogrooming may play a greater role in wild *Pan* species than captive species.

P-16

LIPS COLORATION AS A FERTILITY TRAIT IN WOMEN

DR. LUCIE RIGAILL[1], DR. KODZUE KINOSHITA[2], PROF. TAKESHI FURUICHI[1]
[1] Primate Research Institute of Kyoto University (KUPRI)
[2] Wildlife Research Center of Kyoto University (WRC)

Several primate species exhibit red skin coloration, an estrogen-modulated visual trait that can communicated emotional state, dominance status, health condition, and fertility. When we are asked to picture colorful traits of female fertility in primates, we can easily think of the shiny sexual swelling of baboons, the geladas' "bleeding heart" or the Japanese macaques' red mask. We usually don't picture any woman colorful traits. Unlike non-human primates, women seem to lack obvious and/or exaggerated traits of their fertility. However, several studies have suggested that men may be able to pick up some facial indices of women fertility, such as variation in skin smoothness and brightness around ovulation vs. other non-fertile phases. But none have investigated the possible role of the most colorful and appealing visual traits of the women face, i.e., women lips. Women lips are subconsciously connected to fertility and beauty. Men are drawn to a woman's lips more than any other facial feature and women seems to compete with each other according to women and men's psychological standard of beauty. This study is the first attempt to investigate the relationship beauty women fertility and lips coloration, i.e., whether lips have a darker and redder coloration around the ovulation timing. This is also the first study targeting Asian women, as most study still focus on "white" population. By its originality and its state-of-the art methodology (digital photography and salivary hormonal sampling) this innovative study should enhance our understanding of how "discrete" sexual signals have evolved in humans.

P-18

Swimming order in the group of wild dolphins approaching underwater swimmer: difference by sex and age class

Kasumi Sakakibara
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In various animals, the spatial position in the group has been reported to reflect their social structure (Yellow baboons, Rhine, 1975; Chimpanzees, Hockings et al., 2006; Hawaiian spinner dolphins, Benoit et al.; 2008). However, we still have very limited information about the structure of swimming group of cetaceans, especially difference of the spatial position in the group by sex and age class, because identification of their position in the group is difficult in underwater observation. In this study, we analyzed the swimming order in the dolphin groups that approach and pass the underwater observer to examine the difference in swimming position in the group by sex and age class. We investigated about 120 individuals of the wild Indo-Pacific bottlenose dolphins around Mikura island in Jun and July in 2014, Jun to September in 2015, April, Jun, July and August in 2016. Females tended to swim in more frontal position of the group than males. Especially, subadult females tended to swim in more frontal position than adult females and other sex/age class. In contrast, adult and subadult males tended to swim in more rear position of the group. Mothers with 0yrs calf tended to swim in most frontal position while mothers with over-1yrs calf tended to swim in the middle position and adult females without calves tended to swim in the more rear position. We will discuss relationship between the swimming order and their social interaction.

P-20

The diet of the leopard (Panthera pardus) in Mahale Mountains National Park, Tanzania.

Nobuko Nakazawa[1*]
[1] *Graduate school of science, Kyoto University, Kyoto*
[*]nakazawa.nobuko.62u@st.kyoto-u.ac.jp

The leopard *Panthera pardus* have lost 63 - 75 % of its historic range (Jacobson et al., 2016). In four long-term eastern chimpanzee study sites, there has been no evidence of the presence of leopards for a decade or more. The only exception is Mahale Mountains National Park in Western Tanzania where leopards are coexist with primates.

In general, leopards prefer prey weight ranges between 10-40kg, with a preferred mean prey weight of 23 kg (Hayward et al., 2006). However, prey within this body mass range are scarce in Mahale (Uehara & Ihobe, 1998). Therefore, they probably prey upon small species (<20kg) with high density.

I collected 167 leopard scats along trails from 2014 to 2017, and extracted bones and hairs were then identified macroscopically and microscopically. The analysis revealed that the blue duiker *Philantomba monticola* and arboreal primates, especially red colobus *Procolobus rufomitratus* accounted for a large proportion of the leopard's diet, and the proportion of arboreal primates increased in the rain season.

I will discuss the diet and the primate consumption of leopards.

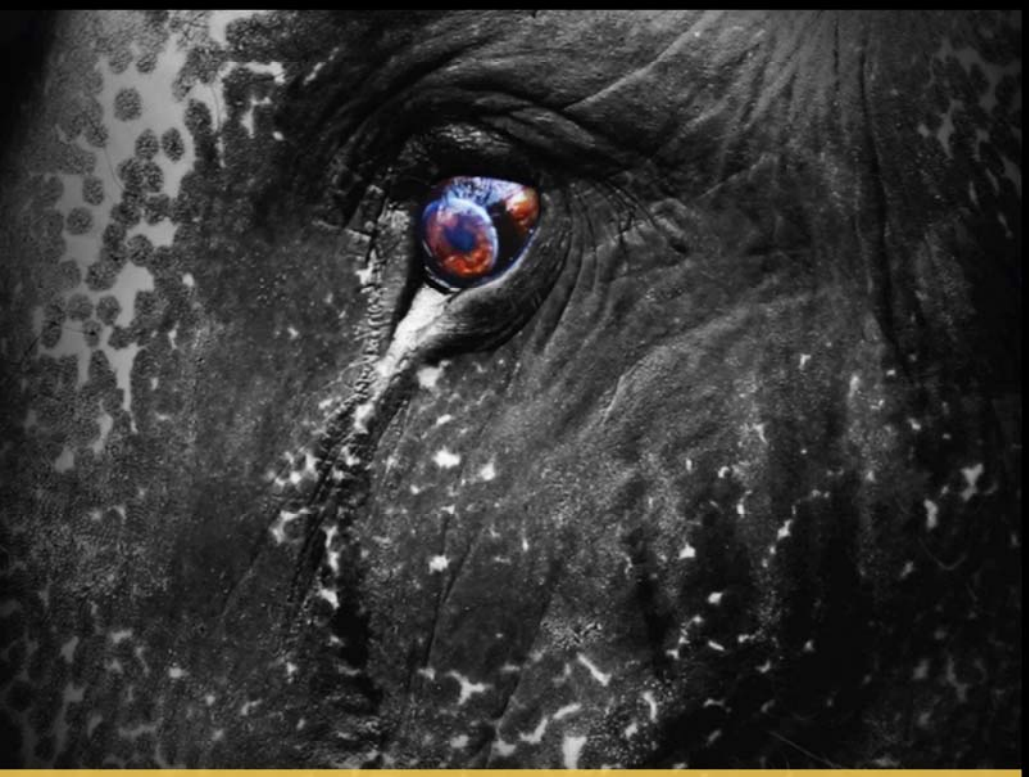
P-22

Expression analysis of cells with induced transcription factors using the next-generation sequencer

Masahiro Kaneko[1*], Shunichi Wakabayasi[1], Yuki Nakatake [2] and Minoru Ko[1,2]
[1] *Primate Research Institute, Kyoto University, Inuyama, Japan*
[2] *Medical school, Keio University, Shinanomachi, Japan*

We let approximately 140 transcription factors develop in mouse ES cells forcibly, and directionality of the differentiation of mouse ES cells was clarified from the change of all caused genes expression. We let transcription factors develop in human ES cells forcibly, and the method to predict directionality of the differentiation of human ES cells by measuring the change of all caused genes expression is tried.
In this study, I let 20 transcription factors develop in human ES cells forcibly and analyzed all caused genes expression using the RNA-seq method.
I used the SEES3 human ES cell lines. RNA-seq uses next-generation sequencing (NGS) methods to sequence cDNA that has been derived from an RNA sample, and hence produces millions of short reads. These reads are then typically mapped to a reference genome. It is theoretically possible to understand perspective of the transcriptome including the unknown genes. We do not need base sequence information for the analysis. The width that we can measure is wide. I used FPKM(Fragments Per Kilobase per Million mapped reads). The number of the total reads sequenced from each sample is set of 1 million. Each genetic sequence length is set of 1000 bases.
I gained 5 million short reads. Each short read consists of 50 bases. The short reads of low quality score were less than 5% of the whole. The short reads of high quality score were majority. I made these short reads typically mapped to a reference genome. I calculated expression (FPKM) every gene. I considered the problem in analyzing gene expression using the RNA-seq. And I considered the solution to problems and plan to calculate expression appropriately.

Conserv'Session: Elephant Welfare Event



Documentary screening

2018.3.3
9:30-11:30 a.m.

Film: Gods in Shackles
Language: English/英語
Registration: NONE, free entry
Discussant: Prof. Raman Sukumar

Prof. Raman Sukumar
Center for Ecological Sciences
IISc, Bengaluru, India

Visiting Professor
Institute for Advanced Study
Kyoto University

2018 MARCH 3-4

gods in shackles

BORN TO ROAM WILD NOT STAND CHAINED

Academic Panel Discussion

2018.3.4
9:00-11:00 a.m.

Language: English/英語
Panelists:
Prof. Tetsuro Matsuzawa
Prof. Raman Sukumar
Dr. Keith Lindsay
Dr. Yumi Yamanashi
Chair:
Prof. Shiro Kohshima
Registration: NECESSARY
(On-site from 9:00 or on 3/3 from 11:30)*

Venue: Kyoto University, Yoshida Main Campus, International Science Innovation Building, 5F, Symposium Hall
京都大学吉田キャンパス国際科学イノベーション棟 5F シンポジウムホール

*2018年3月4日9時からのパネルディスカッションは、学術的な議論の場のため、申込をした参加者限定といたします。
申込は、3月3日11：30以降、3月4日9：00までの随時、上記会場の受付にて受け付けます。
なお、2018年3月3日9：30からのドキュメンタリー映画の視聴は申込不要・入場無料で参加可能です。

https://www.facebook.com/ConservSession/

プログラム紹介

霊長類学・ワイルドライフサイエンス・リーディング大学院（PWS）

霊長類学・ワイルドライフサイエンス・リーディング大学院（PWS）では、京都大学の基本目標である地球社会の調和ある発展に向け、現場力、世界を相手に地球社会の未来をデザインする能力、ならびに我が国の海外展開に欠かせない俯瞰力と国際性に富むリーダーを養成します。

霊長類学は日本発の、そして日本が世界を牽引する稀有な学問であり、近年、霊長類学を基盤にし、大型の絶滅危惧種を対象にした**「ワイルドライフサイエンス」**という新興の学問分野が確立されつつあります。そこで必要とされているのは、**フィールドワークを基盤として、人間のこころ・からだ・くらし・ゲノムを包括的に理解しつつ、「地球社会の調和ある共存」を目指す実践活動**です。

学問としては最先端を担っていながら、欧米にあって日本に明確に欠けているものが3つあります。**(1)生物保全の専門家として国連や国際機関・国際NGO 等で働く若手人材、(2)博物館・動物園・水族館等におけるキュレーター、および、生息地で展開する博物館動物園としての「フィールドミュージアム」構想の具現者、(3)長い歳月をかけて一国を対象としたアウトリーチ活動を担う実践者。**これら日本が抱える3つの欠陥を逆に伸びしろと考えます。研究・教育・実践の新たな展開の場と捉え、学問と実践をつなぐグローバルリーダーの育成を目指します。

プログラムの詳細はHP（http://www.wildlife-science.org/）を参照してください。

1

絶滅危惧種保全の専門家として国連や国際機関・国際NGO等で働く若手人材

目に見える国際貢献：専門性・語学力・フィールドワーク経験を持つ人材を輩出

2

博物館・動物園・水族館等のキュレーター（博士学芸員）

専門的知識・経験を発揮し、社会に貢献するキャリアパス

3

長い歳月をかけて一国を対象としたアウトリーチ活動を担う実践者

京都大学のフィールドワークの伝統と蓄積：現地目線でニーズを発信、日本の具体的貢献を提言できるリーダー

同窓運営組織を作って相互交流・連携と次世代育成を図る

国際性を身につけた実践者の育成カリキュラム

プログラム運営委員

担当教員

◆フィールドワーク実習
　国内フィールドワーク実習
　海外フィールドワーク実習
◆野外研究の基礎となる学問の習得
◆国際連携機関との交流
◆国内実験施設での研修
◆語学

外部評価委員会

国際連携機関

グローバル30プログラムでの実績がある英語での入試・教育・学位授与

◆理学研究科生物科学専攻の8月試験（4月入学）の通常入試　◆平成21年から実施済の春秋入学の国際入試：外国籍の者だけ受験

海外フィールドワーク拠点と連携協定の締結先

フィールド実習のための国内拠点

霊長類学・ワイルドライフサイエンス・リーディング大学院を履修するには

霊長類学・ワイルドライフサイエンス・リーディング大学院（PWS）は、5年一貫教育プログラムです。大学院修士1年生（M1）から履修を認められた者をL1とし、L2、L3、L4、L5と進級し、5年間で修了します。**PWSは、従来の大学院課程と並行して進むプログラムであり、履修することによって現在の所属先を変更する必要はありません。**本プログラムを履修するためには、次の条件がどちらも必須です。

1. **京都大学の大学院生であること：**
   理学研究科生物科学専攻の大学院生になる必要があります。なお、他の研究科の大学院生はお問い合わせください。
2. **本プログラムの履修を申請し認められること：**
   日本人も外国人も同じ手続きです。なお履修対象者は、その時点での修士1年生（L1生と呼びます）か、いわゆる博士課程からの編入生（L3生と呼びます）を対象にします。例年1月中旬に次年度の履修生の募集要項を公開し、3月上旬に試験を実施します。秋入学者は日程が異なります。

カリキュラム

霊長類学・ワイルドライフサイエンス・リーディング大学院（PWS）

霊長類学・ワイルドライフサイエンス・リーディング大学院（PWS）が、生物科学専攻・霊長類研究所・野生動物研究センターとも協同して提供するカリキュラムの内容と日程を紹介します。必修科目の実習は、理学研究科の正式科目として登録されています。なお、実施日時は変更する場合があります。詳細はhttp://www.wildlife-science.org/ja/curriculum/を参照してください。
PWSの履修やカリキュラムの内容に関する問い合わせはinfo@wildlife-science.orgまでどうぞ。

必修科目　最初の2年間で必ず履修する「修士課程相当分」

◎インターラボ

京都市動物園・生態学研究センター・原子炉実験所・瀬戸臨海実験所・霊長類研究所・日本モンキーセンターを回り、生物科学専攻における広範囲な研究領域の概略を学びます。

2018/04/03-08

◎幸島実習

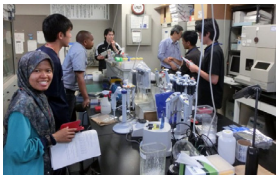
日本の霊長類学の発祥の地である宮崎県幸島において、天然記念物である幸島の野生ニホンザルを観察して、糞の採集から食物となった植物を同定するなど、各自がくふうしたテーマで研究を行い、野外研究の基礎を学びます。

霊長類研究所：2018/04/22-28
野生動物研究センター：
2018/05/06-12

◎屋久島実習

世界遺産の島・屋久島で、海外の学生との研究交流も兼ねて、タンザニア、インド、マレーシアの大学院生とともに英語を公用語としたフィールドワークを行います。採取した試料は、続いて行われるゲノム実習で使用します。

前期：2018/05/19-26
後期：2018/11（予定）



◎ゲノム実習

屋久島で採取した試料を使って、実験と解析を行います（初心者コース／次世代シーケンサーを駆使した高度なコース）。屋久島実習に引き続き参加する海外の大学院生を交えて、実習の公用語は英語です。フィールドでのサンプリングと、それに続くゲノム分析を通して経験することで、フィールドワークもラボワークも行える研究者を養成します。得られた成果をもとに、最終日には国際シンポジウムでポスター発表（英語）を行います。

前期：2018/05/28-06/01
後期：2018/11（予定）

◎動物園/博物館実習

PWSの学外連携施設日本モンキーセンターにおいて、キュレーター・飼育技術員を講師としたレクチャーを受け、現場で飼育実習を行い、教育普及活動にも参加します。PWSの3つの出口のうちのひとつである「博士学芸員」の仕事について学ぶとともに、霊長類及びワイルドライフサイエンスの環境教育の実践に触れます。

前期：TBD（2017/07/08-10）
後期：TBD（2018/02/08-10）

◎比較認知科学実習／動物福祉実習

比較認知科学研究の基礎を学ぶために、チンパンジー（霊長類研究所＝PRI：比較認知科学実習）とボノボ（熊本サンクチュアリ＝KS：動物福祉実習）を対象とした認知実験や行動観察の手技を習得します。PRIでは、霊長類とは異なる環境に適応してきた有蹄類であるウマについてもその行動観察を行います。

PRI：TBD（2017/09/04-06）
KS：2017/11/14-17

◎笹ヶ峰実習（無雪期/積雪期）

京都大学笹ヶ峰ヒュッテ（新潟県妙高市：標高1300mの高原）において、生物観察や火打山（標高2462m）登山や夜間のビバーク体験（戸外での緊急露営）を通して、フィールドワークの基礎となるサバイバル技術を学びます。

無雪期：TBD（2017/07/18-21・2017/09/29-10/02）
積雪期：TBD（2018/03/22-26）

◎自主フィールドワーク実習

自主企画の海外研修を行うことで、履修生の自発的なプランニング能力の向上を図り、出口となる保全の専門家や、キュレーターや、アウトリーチ活動の実践者の育成につなげます。

各自で企画

2017年度実施例：

2017/08/01-10/01（L1@ウガンダ）：
野生アフリカゾウの生息地利用および食性調査
2017/05/11-08/06（L2@ポルトガル）：
ポルトガルにおける半野生ウマの行動研究
2017/02/01-07/21（L4@コンゴ）：
野生ボノボのメスの移籍に関する発達的要因および社会・生態学的要因の研究
2017/02/16-06/21（L4@インド）：
Vocal communication in Asian elephants
2017/05/08-09/11（L4@タンザニア）：
タンザニアのカタビ国立公園におけるキリンの調査

学生の自主企画の集団実習も多数実施しています
- 地獄谷・高崎山実習
- キッズジャンボリー@東京フォーラム
- 小豆島実習
- 知床シャチ実習
- サンフランシスコ実習

選択科目　最後の3年間で必ずこのうちの1つを履修する「博士課程相当分」

◎保全生物学研修

国連・国際機関・NGO等での研修

◎動物福祉学研修

博物館・動物園・水族館等での研修

◎アウトリーチ活動研修

一国を対象としたアウトリーチ活動の研修

教養科目

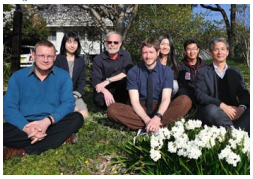
◎ブッダ・セミナー

WWF職員・大使・知事などの多様な講師陣によるセミナーを随時開催しています。公用語は定めていません。

◎アシュラ・セミナー

英国・コンゴ・ブラジル・ブータンなどからの研究者・政府関係者を講師として、公用語が英語のセミナーを随時開催しています。

語学　「自学自習」「現地習得」を支援



- 母語以外の多言語学習を推奨します。なお、英語は必修で英語が母語のばあいは最低ひとつの他言語が必修です。その他の言語習得についても強く推奨します。

国際シンポジウム

霊長類学・ワイルドライフサイエンス・国際シンポジウム
The International Symposiums on Primatology and Wildlife Science

- 第1回：2014/03/06-09
- 第2回：2014/08/29-30
- 第3回：2015/03/05-08
- 第4回：2015/07/21-22
- 第5回：2016/03/03-06
- 第6回：2016/09/12-15
- 第7回：2017/03/02-05
- 第8回：2017/09/26-28
- 第9回：2018/03/03-05
- 第10回：2018/09（予定）

Introduction to the Program

Leading Graduate Program in Primatology and Wildlife Science (PWS)

While working towards Kyoto University's mission statement of the well-being of the world, **the Leading Graduate Program in Primatology and Wildlife Science (PWS)** strives for many other goals. This program also aims to foster the type of individual that will have the ability to make quick judgement of one's environment, the ability to design the future of global society, while all at the same time nurture a leader-type of individual who will be indispensable for oversea expansion.

(Japanese) primatology originated from Japan, and plays a big role in leading this unique academic study to the world. During the recent years, an emerging field of academic study called **"Wildlife Science"** that targets endangered species has been on the verge of establishment. **With fieldwork as its foundation, a comprehensive understanding of the human mind, body, life and genome, as well as engaging in hands-on activities that aims for a "the well-being of the world" are all vital to this establishment.**

While being the front line of an academic field, in Japan this field has a shortage of three important careers that is not lacking in the West. **(1) Conservation specialists of international organization(s) such as the United nations and NGO**; **(2) Curators of museums, zoos, aquariums, and the like, as well as one that can develop and/or expand a museum or zoo as a "field museum" in a specific habitat**; and **(3) Outreach workers that invests a great length of time in outreach activities in a specific countries and societies.** While providing a foundation for new research, education and hands-on experience, this program aims to nurture a global leader that interconnects this academic field and one's accomplishments.

For further details on the program, please refer to our HP（**http://www.wildlife-science.org/**）

1

Conservation specialists of international organization(s) such as the United Nations and NGO

Significant international contributions: Produce an individual that acquires expertise, high linguistic skills, and experience in fieldwork

2

Curator (Zoo, Museum, Aquarium, and the like) (Ph.D. level curator)

A career path in specialized knowledge, demonstrating one's experiences, and contributing to society

3

Outreach workers investing a great length of time in outreach activities in a specific countries and societies

Expanding Kyoto University's tradition: Identifying the needs through on-site field of view; a leader who can propose significant contributions to Japan

To enhance a connection with the next generation by creating an organization that facilitates a mutual relationship

PWS Core Staff Members / Collaborators

Supervisors / Mentors

The curriculum of a practitioner that acquired "internationality"

- ◆Hands-on fieldwork
  - Domestic fieldwork
  - International fieldwork
- ◆Acquiring the skills / Knowledge that becomes the foundation for fieldwork
- ◆Relationship with International Organizations
- ◆Training at domestic facilities
- ◆Language Learning

External Evaluation Committee

International Organizations

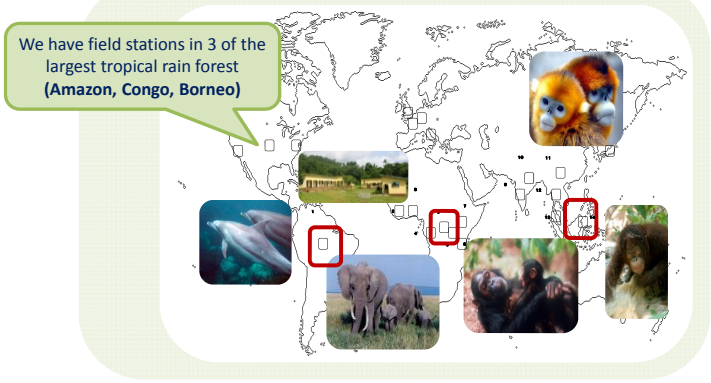
English achievements received by entrance exam, education, and degree through the "Global 30" Project

◆General admission to the Division of Biological Science, Graduate School of Science, Kyoto University (Entrance exam in August, Enrollment in April)

◆International enrollment from Spring and Fall of 2009: entrance exam for foreign students only

Facilities for International Collaborations

We have field stations in 3 of the largest tropical rain forest **(Amazon, Congo, Borneo)**



Domestic Facilities for Fieldwork Courses

The enrollment process of the Leading Graduate Program in Primatology and Wildlife Science

The Leading Graduate Program in Primatology and Wildlife Science (PWS) is a 5-year program. Students approved to join the PWS program from their first year of Master's program will progress from L1, L2, L3, L4, L5, and will complete the program in 5 years.
The PWS program is completed by students parallel to their existing Kyoto University master's and doctoral programs. Therefore, students do not need to change their supervisor or section/laboratory to join PWS. However, there are **two necessary** conditions for eligibility:

1. A graduate student of Kyoto University:
It is required to become a graduate student of the Division of Biological Science, Graduate School of Science (Kyoto University). However, we are in the process of adjustment for students of other graduate departments to enroll in our program, so please do not hesitate to inquire.
2. To apply and receive approval to enroll into our program:
The process is the same for both Japanese natives and foreign students. Eligible students: 1st year Master's students (will be called L1 student), or a doctoral students (will be called L3 student). Annually, we will disclose the guidelines for applicants in mid-January, and administer the entrance exam in the beginning of March. The schedule for October-enrolled students is different. (http://www.wildlife-science.org/index-en.html)

Curriculum

Leading Graduate Program in Primatology and Wildlife Science (PWS)

The following contents show the curriculum and schedule that the Leading Graduate Program in Primatology and Wildlife Science offer. Credits obtained through the mandatory courses can also be used as credit for Graduate School of Science, Kyoto University.

NOTE: Course schedules are subject to change. For more information, refer to the following site: **http://www.wildlife-science.org/en/curriculum/**

Please contact the following e-mail address for any questions about the curriculum of PWS: **info@wildlife-science.org**

MANDATORY COURSES (corresponds to Master course)

◎Interdepartmental Exchange "Inter-lab"

To obtain a general idea of the diverse areas of study in the Division of Biological Science, Kyoto University. Visit the following facilities in succession: Kyoto City Zoo, Center for Ecological Research (KU), Research Reactor Institute (KU), Seto Marine Biological Laboratory (KU), Primate Research Institute (KU), Japan Monkey Centre

Apr. 3rd–8th, 2018

◎KOSHIMA Field Science Course

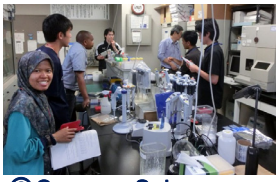
To learn the basis of wildlife research. Conduct observation on wild Japanese macaques (protected species) in Koshima, the birthplace of Japanese primatology. Required to develop independent research topic (e.g., Identification of food items in feces)

PRI: Apr. 22th–28th, 2018
WRC: May 6th 12th, 2018

◎YAKUSHIMA Field Science Course

To learn the basis of wildlife research. Conduct fieldwork on animals/plants in Yakushima, a UNESCO World Heritage Site. English is the official language in this course to facilitate exchange of ideas with international participants, e.g. from Tanzania, India, Malaysia and elsewhere. Samples collected during the course will be used in the following Genome Science Course.

Spring: May 19th–26th, 2018
Fall: TBD(Nov. 5th–11th, 2017)



◎Genome Science Course

Complementary to the Yakushima Field Science Course. Designed for participants who expect to engage in both laboratory work and fieldwork. Beginner (direct sequencing) and advanced (next generation sequencing) courses are available. English is the official language as in the previous course. The samples from Yakushima will be used to perform various experiments and analyses. Students give a poster presentation at the international symposium scheduled on the last day of this course.

Spring: May 28th–June 1st, 2018
Fall: TBD(Nov. 13th–17th, 2017)

◎Zoo/Museum Course

To obtain practical experience in environmental education in the field of primatology/wildlife science as well as to learn to work as a curator, one of the three exit points of the PWS program. This course provides lectures by zoo technicians and practical training as zookeepers.
Place: Japan Monkey Centre

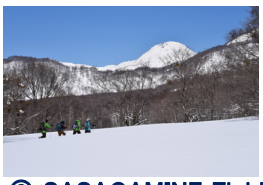
Spring: TBD(Jul. 8th–10th, 2017)
Fall: TBD(Feb. 8th–10th, 2018)

◎Comparative Cognitive Science Course / Animal Welfare Course

To learn the basis of comparative cognitive science. Understand the procedures in cognitive experimentation and behavioral observation. Work with:

- Chimpanzees & Horses (Primate Research Institute): Comparative Cognitive Science Course
- Bonobos (Kumamoto Sanctuary): Animal Welfare Course

Comparative Cognitive Course:
TBD(Sep. 4th–6th, 2017)
Animal Welfare Course:
TBD(Nov. 14th–17th , 2017)



◎ SASAGAMINE Field Science Course

(Non-snow season / Snow Season)

To learn survival skills as the basis for future fieldwork. Activities include:
- Wildlife observation
- Climbing Hiuchi Mountain (2,420m)
- Night-time bivouac practicum (improvised encampment)

Place: Kyoto University Sasagamine Hütte (cabin) in Myoko-kogen (plateau at 1,300m elevation), Niigata Prefecture

Non-snow Season:
TBD(Jul. 18th–21st, 2017
Sep. 29th–Oct. 2nd, 2017)
Snow Season:
TBD(Mar. 22nd–26th, 2018)

◎Fieldwork (designed by each PWS student)

To develop skills in planning projects aimed at one or more of the three exit points (goals) of the PWS program (i.e., conservation specialization, curation, outreach). Required to design/conduct individual overseas training projects.

EXAMPLES (Academic Year 2017):

Aug. 1st-Oct. 1st, 2017 (L1@UGANDA):
Monitoring the lifestyle of African elephants in the Kibale National Park, Uganda
Feb. 1st– Jul. 21st, 2017 (L4@DRCONGO):
A sex difference of mother offspring relationships in bonobo patrilineal societies
Feb. 16th– June 21st, 2017 (L4@INDIA):
Vocal communication in Asian elephants
May 8th– Sep. 11th, 2017 (L5@Tanzania):
Social structure and behavior of giraffe (giraffe camelopardalis) in Katavi National Park

Many group fieldworks are designed by Students.
- JIGOKUDANI/TAKASAKIYAMA
- Kids Jamboree@ TOKYO
- SHODOSHIMA
- SHIRETOKO (Killer Whale)
- San Francisco

LONG-TERM INTERNSHIP TRAININGS (corresponds to Doctoral course)

◎Conservation Biology Internship Training

UN-related organizations and NGOs

◎Animal Welfare Internship Training

Museums, Zoos and Aquariums

◎Social Outreach Internship Training

Outreach activities in specific countries and societies

LIBERAL ARTS SUBJECTS

◎Buddha Seminar

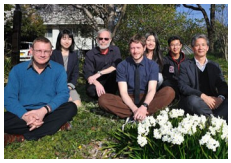
- Lectures from WWF officers, ambassadors, governors, etc.
- Official language: not specified

◎Asura International Seminar

- Lectures from researchers, government officials from the United Kingdom, Congo, Brazil, Bhutan, etc.
- Official language: English

LANGUAGE LEARNING

"Self-Study Paradigm"
"Hands-on Experience through Fieldwork"



Students are required to become proficient in at least one foreign language in addition to their native language. English is required for all students whose native language is not English. International students whose native language is English are required to master another language of their choice. Students are also strongly recommended to learn a second foreign language.

The International Symposiums on Primatology and Wildlife Science

- The 1st: Mar. 06–08, 2014
- The 2nd: Aug. 29–30, 2014
- The 3rd: Mar. 05–08, 2015
- The 4th: Jul. 21–22, 2015
- The 5th: Mar. 03–06, 2016
- The 6th: Sep. 12–15, 2016
- The 7th: Mar. 02–05, 2017
- The 8th: Sep. 26–28, 2017
- The 9th: Mar. 03–05, 2018
- The 10th September, 2018 (tentative)